## QUERY

UniRef90 - D5M178
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DADLMNDANTPGDVLTYGMGPANLRYSSSENVDTVQNL DDEQLKLMNDDNQWTQPRKDYSNTGYSRLTQQNAGNVAK DQEKAMSNANNWAHPRGQHDNQAYSKLTQLNKGNVKNL DQEILNDAKSTDQ\|VTNGLGLQGQRYSTLDALNTNNINQL RASEQDGSEWLSHGRTYAEQRF
NQELQFLAESGKAWTYYGGDQANTRY NQELQFLIQQDAAQWAMSSKTYNGWRYS



DK
 QAVIHADEHPENWLSYGRTYSE
DATPQKSTANTDWPMHGNNRYEQRF
RLANADAEP
D ANDHVTVNVLQYGMGTNAQRWF

## DAMIQNDAKSTGD L

促 NEEVVRASKNPDLWPAPGRDLAMTRH TAMLVGADGDTANWDS SATRDGADWPT
$\qquad$ Q A DETASAGAEWLTYGGTYDEQRHS
DSTAKPADWPQHGRTAFEQRYS

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D D \square A N D A K S A G D V L M Y G M G V E G K R F S
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TER KNASAKAGEWLTYGGTYDEQRHSPLKQ


ED DMAD ASNP SPANVDWAEHGNGPEEQRFS DAPGNAASWMSHGRSYDEQRYS LLTNGNAGADWP TARAAAGDSEPGNWLISTGRTYNEQRYS
QRLVNAANEPHNWLSHGRTYKEQRYS

## DARMIAAAEDSGTNWPS

LANAAS ANGVGFNGDHY
NDAALSDPKQGANWLASGGRNYSEQRY
DDILNDEQSNDNVLMYGLGVRAQRF
LPPGAGDGDWLMPSRDYGGTRYS
$D R \| L G A R S$ SEPNWLTYYGTYDGQRYS








K A RKLLTHPDRNGVVYTLD RTDGALVSANKDDDTVNVFK S K M T P L V T H P D R N GI I Y T L N R E T G S L V A A D K I D P S V N WT R K
 K DRKLLVHFDRNGFGYTLDRDSGELLVAEKFDPAVNWATH K MTPLLSH IDDRNG L LYTLNRENGNLIVAEK■DPAVNVFKK KETKALVHFDRNGFAY VLDRVTGELLQANKFDPAVNWATG K D RP LL THFDRNGFGYTLDRATGEVLVAEKFDPVVNWATK K ERKLLTHFDRNGFGYTLDRTDGELLVAEKYDPAVNWATK E ERKLLTHFDRNGLAYVMDRVSGELI SADKYDPVVNWTTG KMYKTAVHFDRNGFGYTMDRASGELLVANKFDPSVNWANS K P VKALVNFDRNGFGYTLDRVTGELLVAEKYDPAVNWATH K K H NVLVHFDRNGFAYTLDRETGELLVAKKYDPAVNWATE KMHKTIVHFDRNGFGYTLDRETGELLVAEKFDKSVNWATH QQRKVLVNFDRNGFAYTLDRATGELLVAQKFDPTVNWATD KEMKGLVHFDRNGFGYTMNAETGEVLLATKYDPVVNWASH EQRKGLAI I DRTGFGF LLDRETGELLVAEKFAPETNWASH
 A L R K AL DHP GRNGYMYVMD R ETGEVVGSADPYD TVVTVYK G K STPLLTHFDRNGFAYTLNRETGALI RAGKYETTANWATG K P R KVLVHPGQTGFVYVIDRTNGELLSAKPF HALTAATG
 KVEKLAGTADRNGFFYVLNRENGKFVTAHPFVKNITWAKG QL R KVVLVHPARNGYMYVI DRATGEVLSADPYDBHITATTG R P R KL L THFDRNGFGYTLDRASGELLVAEKFDPSVNWARR K PRKLLVHPDRNGYVYVLDRETGEVLSAKPFAP I TSSTG QT $\quad$ KK A GAK A D R N GF FY V L D R T N G K L L S A S P F V T K I T WA K E $K R R K V I V R P E R N G F M Y V L D R A T G Q V Y S A D P Y G P \quad V N S D L K$ K TVKAAATADRNGFFYVLNRENGDFIRGFPFDDKITWAEG RARKTLTHFDRNGFVYVLDRADGELLSADKYDPAVNWASR KMMK L GAKADRNGYFFILDRTNGKMLQATPFDVSTTWATG NGKKLLASHDRNGFGYTFDRTNGTLLVAQKMNPFVNWATS GGKTYA WHHDRNGFAYTWTAAEGTLV AAEKVHPFVNWATD KT $\square$ KAA GTADRNGFFYVLDRTNGKFI RGFPFVDKI TWAK G ERRKVIMQQAPKNGFFFVLDRTNGEFI SADNYVD VNWAT G QPRKVLLQAPKNGFFYVLDRVTGKLI SAKPFSSKVNWAKG KPRKVLMQAPKNGFFYVLDRATGELLSAEKFGK VTWAEK $K T V K A V A T A D R N G F F Y V L E R E S G D F I R G F P F V D K I T W A S G$ KTRKVI LHAPKNGFFFVVDRSNGQFI SAKNFVDVVNATG K DRKVFMQAPKNAFFYVVDRTNGKLI SAKPYA YQNWAEG K QRKVILDAPKNGFFFVVDRTNGEFISAKNFVDVNWATG $N T V P V L M S A D R N G F F Y V L N R K T G K L L D A A P F V G H V N W A K G$ QVRKALVHVGRNGFFYVLDRTTGELLSATPYTLVNWATG K TVKAAATADRNGFFYVLNREDGDFIRGFPFVDKLTWAKG KPRKVLMQAPKNGFFYVIDRATGELLSAKGDVP QSWTKG K PMKL GAKADRNGYFYVLDRDTGGFI SASKFVVMQT T WA DG
 EMRKVAMQAPKNGFFYVLDRVTGELISAEKYTIDVDASH K TVVA GAKADRNGFFYVLDRSNGKFI SASPFDTRQTWTKG EQRHVIVQAPKNGFFYILDAQTGEFLSAVPYT FQNWARS EMRHVVVQAPKNGFFYVLDAKTGEFLAGKNYVYENWASG QPRKVI LHAPKNGFFFVIDRTDGRFISAKNYVDVNWTTG TMRKV AI QAPKN GF L Y I L D R DN GK L L S A K P F V D V T WA S H
 KTVKATAHADRNGFFYVVDRKDGKLQNAFPFVDGITWASH KKRKVILDHAPKNGFFFVIDDRTNGKFISAKNFVPGVNWATG RMRKVIVMAPKNGFFYVIDRETGEFISAEKYTMATTWATH NGKRVGAKADRNGFMYVNDATTGKLENAFPFVKKDTWAK G KERKVLMQAPKNGFFYVLDRETGELLSAEKFGGVVTWAER
 KMRKVLMQAPKNGFFYVIDRETGKFISAKPYV SINWAS G KMRKVLMQAPKNGFFYILDRATGELLSADPIAKT TWASH K RFATA DRNGFFYVL NREDGAFVNAT PFVVSDITWAK G KTIRATAHADRNGFFYLVNQDNGKFIKAFPFVDNITWATG ETVKAGAKADRNGFFYVMNRENGELLLAEPFVENITWASH APRRVAMQAPKNGFFYVIDAATGEFI SGDAFVPBLNWTG $K M R H V L V Q A P K N G F F Y M L D A E T G E F L S A D P Y T \quad F Q N W A K G$ KTVK ATAHADRNGFFYVTDRKPNSVLAAFPFVDGDTWAKG APLRVAMQAPKNGFFYVINAQNGEFISGEAFGPVDWATG $K L I K A T A H A D R N G F F Y V V N R Q N G E F I R G F P F V D N I D W A T H$ KPTKVLMNANRNGFFYVLDRSNGKVLAANPYVK VNWAS S KEVPSVVQFDRNGFAYVLDRRDGTLLRAHKFVPANNAER K QHRAAAHADRNGFFYVTDNRPTALLNAFPFVDDDTWAK G KPRKVLMQAPKNGFFYVLDRATGKLLSAKAFAP VTWAS G K S RQVI MQAPKNGFFYVLDRRTGALI SAEKFVPBGNWASH K P R KVLFQAPKNGFFYVIDRSNGKLI SAEK IMAKVTWAER QARDAI IHADRNGFFHAIDRDTGKLI YAEPFVKATSVTG
 $K Q V K A S A H A D R N G F F F V T D R K P T S L I G A W P F V D G I T W A S G$
 KI RKVLMHAPKNGFFYVLDRTNGKVI SAKPYVPVTWASG KVVKAGATADRNGFFYVLDRANGTFLSAMPFVAKI SWAKG AKRKVLMQAPKNGFFYMLDRTNGKLLSAKNFVPDVNWAS G GPRKVLLDHAPKNGFFYVIDRKNGKLLDAEKIAK VTWATG
 ETRKVMVQFNRNGFAYTIDRRTGQVLVAAPFGBHENWSTG
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## QUERY <br> UniRef90_D5MI78 <br> UniRef90-A1WIX5 UniRef90-UPI0002DD95A3 UniRet90-Q0BQT2 UniRef90-B7L2Y7 UniRef90_UPIO0037C4149 UniRef90_S9RDD0 UniRef90-F5T280 UniRef90-UPI0003808C6F UniRef90-G31UW5 UniRef90-G8AVF1 UniRef90-UPI00036C9BE7 UniRef90-S2KIV1 UniRef90-F5RHT9 UniRef90-UPI00037F99A8 UniRef90_UPI00045E7EB3 UniRef90-14YT71 UniRef90-UPIO003716167 UniRet90_Q1H1B8 UniRef90 D5V713 UniRef90-UPIOO046301E0 UniRef90-B8IC75 <br> UniRef90-F8JGY1 <br> UniRef90-G8AFY6 <br> UniRef90-UPIOOO47A7199 <br> UniRet90_A6EYR5 <br> UniRet90_B8ET56 <br> UniRef90-UP100026CC0C5 <br> UniRef90-D7DHO7 <br>   <br>  <br> - <br> S <br> S <br> S <br> 

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& \text { S N K S K } \\
& \text { S P R T L } \\
& \text { S } \\
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UniRef90_J2KZ43
UniRef9O_U2WTN8
D P K R E DF FM 410
420
430
440
DPR SELFFMGINHICMDWEPFMLPYKAGQFFVGATLNMYP D PRSEI F FMGVVNHI CMDWEPFMLPYRAGQFFVGATLSMYP D K K R E E L M M F G T N M I C M D W





 NPATGLVY DPA QEMGFVYQADAAFKPMPKVDLGAATVPDD


 NPQTGGLVYLPA QHVPL TLLQDNQNWKSQPEPHSNNIGWNIAT
 S P D T GLEYVPSNEWEMD $\square$ WNET TSYKK GAAYLGAGFT $\square$
NPDTGLVYI P A H DM S A Y YE H $\square P E A P K R N P F M Y Q L G G R T G M$
 NPDTGGVY IPAMETFG DYADSNEVHEDRERWWNTGMKWDA NANTGLEYVPANEWGMDIWNEPITYK KGAA Y LGAGFTDH
 SPKTHLVYLPAHQIPFGYQNQVGGFKPHPDSWNDGLDMTK NPQTGLVVYVPA QNVPANLMDDKRWRFNGALQSNTGWNTGK
 SPKTGLVYI PA QLVPFGYAD DKTFKFTPGRWSARDDGPRD SQDTGLFYVPANHWKEDYWTEEVSYKKGSAY LGQGFRIKR NPQTGL AYFPAQHIP LVMQDNKDWKFNGFPMSGTGWNLAK SPDTGGVY VPAQEIPDVYGHDSDYYNSKGWNVGVRFELAA S P D T G L F Y Y V P A N E WG ME DWN E P DT Y K K G A A Y L G A G F T I K
 SPK EK LVY V PAFEAGMMYAPEAA WKPDTARGFNVGFNLGP




 S QNT GWF YM GANHWKE DYWT E EVTYK KGAA Y LAGQ GFR I KR NP QTG GLAYANTLVFGGHYKTEPATYKA GEWYLGMDLT DLW DPANSAVFFCGTNNWHMEPQERGNTMMGLPYVFANVMMKP S QK TGGLFYVPANNWTEDYWTETVTYNAGAAY L GQGFR VKR


 N P D T G L L V Y lim A M D L P F N F Q H SPDTGLFYI PANHWAMDYWTEHLTYKAGSAYLGQGFRI
 SPKTGLVYLNAFENSAEVRDDPNFKTYTRGPFNTGLD
S P D T KL FYVP S NE WGMDL WNEPVAYKKGAAY LGAGFTDR










QUERY
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GYAALSNYTALGGQLTVFALPG
GYAALSDYTALGGQLTVFALB
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A HASL GQYTNL G GVLLTVMSTMP

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A Y A AL N QYTAL GGGLTTVFALP
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AMKDLK K
AMKDLPQHTDKGGQLYVFSL
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GYA ALSQYTAPGGVLTVFALP
LPEATK GTTLNVFALP
ALAPKLVK K
EVAKVVKDFNQGGMVWTFK
VYAALAQYTALGGQLTVFALP
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GYKELTKYNPGGGGLTVFSLL
EVAKRIKEFNQGGMVWTFKLP
SQRASDLKTAGTVYTFVLNGDAEMPEFT
PRRNLS
$R V L T F A L N G A A K L$
GDAALAPGVRNLSRLLVFKLGGQSSLPPLPQA
EVAQRVSNFNQGGSVFTFK/L
GQSQRASEGNVPGTVYTFVLGGKAPDPKFT
KNKMPNGLI DAFKLKGKATLPM
GLAARHTERKGPGTVYTFVLDGKAK PPAFVDYQ $K K L L S S T M E G A T L F V F E L P$
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GALS LARAGVQPYAQVLTYKLGGTAKDQEPAP
EVAKTFKEISQGGSLWVFKLPKQ
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AKYGNE GRLLVFKVGGEAAYPEVVV

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GMGRTSGWTVNHSYIAVFSLDGKAQLPTMN
RRVADREGPGTVYTFAL GGKAAMPE
A A Q QYPRN S R L LVFK G G A A K LP
HKRPNGRVLVFKLGGTAKLP
DMAVLTKPVAQGGSFWVFKLP
GLMNRATEHQGPGTVFTFAVGGNAKMPD
ELAKRSKGSTARPRVLVYKLGGTHELPPEPTPEQ
DVASKVNYLEQGGSVWVFKL
GDAAVAT GVRNDSRILVFKL GATAALPQLTEP
AMAKLTDKIPQGGVLYTFRID
L G RKAPVRNISRLLVFKIGGKAQ
NRLVFR DGKGLPPPNAAPRQ
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EVVAPLVRHISQGGMLWTFK
A YDEKVPSTV GKIVTFKLGGTGEDPDADLP
A LAR RIRNSSINHSRLLVFALNGHDSLPD
DLADLTTRVTQGGSFWVFKL
AFDEKTSATV GKVVTFKLGGTAT $\square A E P A \square P K \square Q$
DMAE LTKPVAQGGSFWVFKGP
DMATLT TQVSQGGSFWVFEПP
A LTNPDRSKRNDSRLLVESLEGKA
PKDPGGFRVSPARLLVFRLDAAG
QYRRS $\square$ NRLLVFALDGKAQLEESPAPE
PMAKAADDVPRGGTLYVFALD
NYAK VRPEARVLTFKIGGTASDPAP
GEAVEESAANNTNRLLVFRIGGDKQLTKLNI
DMADLTKQVTQGGSMWVFKLP
KAWDYRTQKRRVLTFALLDGKAKLPP RQPGRMVAFRLLNGTAKL
$\square$ LSDKSGPSRN DSR LLVFK DDGK

DMADLTRSVSQGGSFWVFELS
A VLD K K T T VPQGGV $V$ VVFK $\square P R K$
TKHGDS LWT FALDGT $\square E S G T T P D A D$
WK Y GQQPRRLLSFAI GGRAKLPP


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| :---: | :---: |
|  | VEWVTS ${ }^{\text {a }}$ |
| UniRef90- W7W6E | KVAWIHQPTHTHGLQATPTVYDGVMYTIAPADNNVFALDA |
| UniRef90-UP | N |
| UniR | KLAWHFDLEPGYSA STPLM |
| UniRet90 UPIOOO4071762 | GLVWSLDLD EQSALAATP:EVGG |
| UniRer90-UP10003450793 |  |
| UniRef90-V5SI26 | NHDWSQSMGA LRGQEGQPVVVEHMMYFSSGCPNQAL |
|  | EQAWVFOTGDVRTY NTPLK ND |
|  | APVAlAQTGYSASFETTPIVVNG |
|  | TPMWSYSTGKLEGHQAPPIVNNG |
| UniRef90 B1Y1U3 | HVAWIHQPGVTH GLQATP |
| UniRef90-UPIO | KVAWTMQLGGVEGGEGTPIVENGMMYVTDGWGSVY |
| UniRef90-UPIO004763E | VPVWTYSTGTGTGLETAPIVNNGMMFITT DRAK |
| Unil | VPAWVFQSPSTYSFEAAPIVVDGVMYV SGWDGWV |
|  | KVA WIHQPN |
| UniRef90-W5 | KVNGKL |
| UniRef90-D2S4D2 | VVEG |
|  | VMVDGVM S GNLGRVYALDA |
| UniRef90 047 PG | 俍 |
| UniF | G |
| UniRef90 Q13WU0 |  |
|  | QVAWT R |
| UniRef90-UPIOOO3B3 | WSYDMGTERGQEATPLVVGGV |
| UniRet90-C6XDD2 | $\checkmark$ ANG |
|  |  |
|  |  |
| UniRef90-R9E | RTGDFKTELTBKGK |
|  | K GKM |
| UniRef90- YOKHG7 |  |
| UniRet90-N0B3P7 | KLDWA ${ }^{\text {L }}$ |
|  |  |
|  | EKVWEFSTPEETTYEVTPLKIDDSLYICTPH NFVIALDA |
| UniRe9-A0 |  |
|  |  |
| UniRef90-U2YNB3 | KVGN |
| UniRef90-A4YKW1 | QLAWEFQTGDRKGNEVTPLKIGD |
|  |  |
|  |  |
| Q112 |  |
| UniRei90- B4EZE1 | (1) |
| UniRef90-N8ZFM3 | TGRDTKDENTPIQIG |
| UniRef90-X4Z9U0 | E |
|  |  |
|  | KEAWRFRTGDFTTDQMTPLQVGN |
| 位 | EVAWTYHTGDLYTFEATPLKVNGL |
|  |  |
|  | KVAWTYHT ${ }^{\text {d }}$ GSEYQVTPLKVGNT |
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|  | HVAWT FHTGDDPDDQETPLQUDR |
| Uni | K |
| UniRef90_UPI000 | QVAWTFHTGD |
|  | MV D |
|  | KVGKTLYACTSYSDV |
| UniRef90-A0' | QVA WTYRTGNGAEDQDTPLQVGDTVYDCTPHNNVIALDA |
| $-{ }^{B 5 Z}$ | DLAWTYRTGKSDGDQNTPLQGDT |
| UniRef90-UPI00025573D4 | KLAWEFRIGDHKGNQAIPLK |
| UniRef90 UPI00040B6E69 | KVAWTFRTGDTRGDEVTPI KI R Dity ics PhQ |
| 81 | KVAWTYRTGDMPGDENTPIKVGDT |
|  | EVAWTFQTGPGVDGEVTPLKVGDKVYVCTPYSDV |
|  | QVAWQYQTGDVKTYQVTPLKIGDSLFLCTPHNWAl ALDA |
| ${ }^{\text {LoN }}$ | EKAWEF |
| UniRef90-UPIO004061 | KVAWTMHTGNGAEDQQTPLQIGN |
| UniRef90-U11 | VRGWEFRTMKRTKFEVTPLFVED |
|  |  |
|  | YRT |
| UniRef90 Q89D06 | SVAWIHPGRSTRGLQSMPL |
| UniRei90--13ZB15 | K |
| UniRef90 UPIOOO40 | KPlCTAELGDAGGFQSGPVVVGNSMFVTTA NTTVGLD |
| ef90_UP1000465 |  |
|  |  |
|  | KVAWTYHTGNGAEDQLTPLQVGGDKVFICTPH NDLIVALDA |
| 90 13 | ¢LAWTFQTGLGGGMKSTPILVDGVLYFT MPDHVWAVDA |
| UniRef90-F3EDD2 | Q |
| 19 | QLVWS WGLLSPGGTTQETPLVHNGVMFVQN |
|  |  |

## UniRef90 H0Q5A7

 UniRef90-K6DNR5 UniRef90-W7W6E3 UniRef90_UPI000360DF79 UniRef90 J2FVJ8 UniRef90 UPIIOOOOM71762 UniRef90-UPIOOO3450793 UniRef90-D6PDZ7 UniRef90-V5SI26 UniRef90_K2MK76 UniRef90-A5FYU4 UniRef90-W9H3K1 UniRef90_B1Y1U3UniRef90-10QTC9 UniRef90-UPIO00463E523 UniRef90-UPI0004763B8A UniRef90-T2S1F6 UniRef90-HopT60 UniRef90-W5J1S7 UniRet90 D2S4D2 UniRef90_N1MPG7
UniRef90-Q01VF3
UniRef90-Q4ZPG2 UniRef90_UPIo00369253E UniRef90-B9JXSO UniRef90-Q13WU0 UniRef90-A5VDY4 UniRef90_UPIooo3B33512 UniRef90-C6XDD2 UniRef90-M4RUl3 UniRef90-D8JTN9 UniRef90--R9BA57 UniRef90- ${ }^{-1} 2 \mathrm{HCX5}$ UniRef90-UPIO004781281 UniReffo-YOKHG7 UniRef90-NOB3P7 UniRet90-F7VAQ6 UniRef90-W8R8L0
UniRef90_AOAO21X6D UniRef90-A0A024KJ83 UniRef90-A3PJC4 UniRef90-U2YNB3 UniRef90-A4YKW1 UniRef90-W6WAC8 UniRef90-B8ETE2 UniRef90-Q11z88 UniRef90-E1VA02 UniRef90-B4EZE1
UniRef90-N8ZFM3 UniRef90_N8ZFM3 UniRef90-UPI000368F2B7 UniRef90-BOVQG4 UniRef90-J2KWZ4 UniRef90-UPI00037C2F8E UniRef90-UPIo0036AA62E UniRef90-E6WM04 UniRef90-UP100037D9EFE UniRef90-A0A058ZJJ6 UniRef90-X5QFU3 UniRef90-A0A059FJD5 UniRef90-A0A038GPQ8 UniRef90-UPIOO04767CA3 UniRef90-UPIO0047E766B UniRef90-U2E131 UniRef90-A0А031JW30 UniRef90-F6F398 UniRef90-A0Ао31JYF9 UniRef90-B5ZNG4 UniRef90-H5Y9X9 UniRef90_UPIO0025573D4 UniRef90-UPIO0040B6E69 UniRef90-R4WR81 UniRef90-F6F363 UniRef90-M3KKW4 UniRef90-F6AGG6 UniRef90_LoM084 UniRef90-UPIO00406E502 UniRef90-U1IQD8
UniRef90 A7HWB8 UniRef90-A7HWB8 UniRef90-U2LZD4
UniRef90 O89D06 UniRef90_UPIO0037D2044 UniRef90-13ZB15 UniRef90_UPIOOO40C3846 UniRef90-UPIOO04650E07 UniRef90-H2J231 UniRet90-W5IU89 UniRef90-F3WY22 UniRef90-I3ZIG0 UniRef90-F3EDD2 UniRef90-A0A024KH19

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AKTGKELIWRYKKEJLIPGE
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AKTGKELIWRYKKELPGE MLQLHPTNRGVALY
KTGKMI WEYRPVIANGLNTVGCGWTTRGVAL RGVTVG ANKGKVLWTYVPKINKYAKGVHCCDA ${ }^{2} \mathrm{~V}$ RGAAYA AVTGEQL WEYDGGTRERAKSALQMSWGNKGDAY
TGRLLWTYDPQANEAARDVRRAWATNRGVAYAD
A SGKEKWRFDPKTNPTFQHVTCRGVSYHETPAVTQPALC
R AKNPVQVWHYKTDRDESAVPRACCDTVHRGVNYAA ATTGQTLWTY HPTNRGVGLY
A TGAVLWRYTPKLDPVVREVFYGSAS
A TGKEKWTFDPKTDPTFQHVTCRGVSYYEDPAVAQGNAC
GGKGTLLWKMDPKTDHDAGAVACCGVDNRGVALWGN TGEKFWEYQRQRPQDLRQL HPTNRGVALYG
R TGQELWRYKHEVPYDTS QALCCGNVNRGVAVAK
PDTGKELWRFDPKTQNAANFKGWAHMTCRGVAYHDEAAYC
KTGQLLWQYKHAHPFDVS GCCGNVNRGVAVAK

PDSGKEIWRFDPKTQNAANFKGWAHMTCRGVTYHDDAAAC GATGRDKWKYEHSLPGDLGPFDCCEADNRGVAVYKDMABC A TGKQKWKYDPNVNPDRQHQTCRGVTYYADPAATAGASC AKTGEQKWKFDPKLDPSFQHVTCRGVSYAASAASAASGAC A TGALLWQYDPEVDGQWGRNACCDVVNRGVAYR ARTGEPLWRFDPIVDKEQASKGCCDAVNRGVALWG GETGKTLWHYKPELDPLD PATGKEKWRFDPKLDHTFQHLTCRGVMYYDQNRKSGVTVEC A

KTGQELWRYTH DRRKDWQMCCGPANRGVAVAN

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ARTGEK DWRYEHKLPAQRQH
ARTGEKIWRYEHKLPAQ KLCCGPANRGVAL

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KPGP IK WKFDPNPSPQA】GKACCDAVIRGWAYAD
S GK QLWWKA EADA WERCRGVA YFDSTATPVTTVASNTAC
E T
TGREK
$P$ VS GKEKWRFDPK ITWKRCRGVAYTELGDAPQDGSTPA IAG A ETGEERWRFDANLDPNRQHQTCRGLSYYRDASVIETRVC
 A S GKEKWRFDPQVNKDRQHQTCRGVSYYADAKVAA GQPC
 ADS GK QLWKRETQVWNRCRGLAYFDATPVTPVNLPAGDTC PDTGKERWRYDPKI NRDA QHMDCRGVAYHDSGAADHFDS C A ASGE LLWKH DPKVDRTKAASFCCGVVNRGVAVW A AD GKPRWTFDPKA AAPYWQRCRGLGYYRMPSEAQSADC A ATGKLRWKFDP QVNKAFQHMTCRGVAYHATKPGPAPSDC

E TGGKPVWRWRSKMI DRKGFAYNNCRGVTY YAVPGMTGLC

GDTGEVVRWRFDPSSIVNRDAQHMTCRRGLAYHD GAAA GATANC ADT GKARWRFDPHAQ TAEHVTCRGVGYYEEKSSPALQQC
ANTGKQLWKREAEVWNRCRGLAYFDATPVKAVSMAADASC


G G GVQLWA WNRPS DGN HVANRGVAYLN
AKNCRIKWQNVYKNQQPPVFAVNRGVAYF
P ET GK TK WKFNP T $\square$ NGAK DFRGWAHMTCRGLSYYDAD RYC
A T T GAQRWKFDPKSDTSANEY LAARGVAYSQSA G D KVC


 A A S GD LL WQY QY S LP TGVNPGGERSKALDYGDN

## UniRef90_H0Q5A7 UniRef90-K6DNR UniRef90-W7W6E3 UniRef90_UPI000360DF79 UniRef90 J2FVJ8

 UniRef90_UPIOOO4071762 UniRef90-UPIO003450793 UniRef90-D6PDZ7 UniRef90-V5S126 UniRef90-K2MK76 UniRef90-A5FYU4 UniRet90_W9H3K1 UniRef90_B1Y1U3UniRef90 100 IC9 UniRef90-UPIO00463E523 UniRet90-UPIo004763B8A UniRef90-T2S1F6 UniRef90-HOPT60 UniRef90-W5J1S7 UniRet90 D2S4D2 UniRef90-N1MPG7
UniRef90-Q01VF3
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UniRet90 F7VAQ6 UniRef90-W8R8L0 UniRef90-A0A021X6D4 UniRef90_A0A024KJ83 UniRef90-A3PJC4 UniRef90-U2YNB3 UniRef90-A4YKW1
UniRef90 ${ }^{-}$W6WAC8 UniRef90-B8ETE2 UniRef90-Q11Z88 UniRef90-E1VA02 UniRef90_B4EZE1
UniRef90_N8ZFM3 UniRef90-X4Z9U0 UniRe990_UPIo00368F2B7 UniRef90 - BOVQG4
UniRef90 J2KWZ4 UniR Refo -J2KWZ4 UniRet90_UPIIOOO37C2F8E UniRef90 UPIOOO36AA62E UniRef90-E6WMO4 UniRef90-UP100037D9EFE UniRef90-A0A058ZJJ6 UniRef90-X5QFU3 UniRef90-A0AO59FJD5 UniRef90-A0A038GPQ8
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UniRef90 O89D06 UniRef90_UPI00037D2044 UniRef90-13ZB15 UniRet90_UPIOOO40C3846 UniRef90-UPIO004650E07 UniRef90_H2J231 UniRef90 W5IU89 UniRef90-F3WY22
UniRef90 $13 Z 1 G 0$ UniRef90-F3EDD2 UniRef90-A0AO24KH19
UniRef90_V8QTT5

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 D GKVVYVGLLDARLVALDQKTGKVVWETRVDDWEKGYTITS R G K V F I G T L D G R F V A A D D Q K T G K E L W S T Q L S D M K K D Y G F S S A GHVVFVVTTDGYVI SLDAKTGKEAWKTYDYPDQSPRNSNG GRIIFV ATRDCRMVAVVARTGKDVWQSSFLVPGSNSTSTG A R RIIL PVND GHLYAL DAETGARCAEFGDNGDVNAYEPTS GRVVYVGTD GRLVSLDAATGSVVWEVDTDDRTRFYTITG
 NGMVYMLT LDDHLI AVNARTGKQEWMTQVADPRYGYSETM GDKVYLATLDACVVALSAKTGEQVWEKCIADWSDGYYMTL
 SRRVVLLPVNDGRMFALDAETGARCADFGNNGELNRYEPTS
 R GKVF L GTLD GRFVALD QKT GKELWAT QLT DQKS QYGFSA PKRLFV PTADTRLI ALLDADTGKVCEGFGNK GEIDGYYSTS

 PRRIFLPTADTRLI ALNADTGKMCEDFGNTFAPGGYYSTS


## A L N D <br> | A |
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| L |
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$\begin{array}{cc}A & R \\ L^{R} & R \\ N & G \\ K\end{array}$ | $V$ | $Y$ | $L$ | $P$ | $T$ | $S$ | $D$ | $A$ | $R$ | $L$ | $I$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $Y$ | $L$ | $P$ | $V$ | $N$ | $D$ | $G$ | $H$ | $L$ | $Y$ | $A$ |
|  | $L$ | $L$ |  |  |  |  |  |  |  |  |  | A A

A Q
GTVFVA S E D G R L HA I DA K T GKAARWDA D T I N H K Q P Y A S T G $D A V F M G T V D A R L I A D A R T G K L V W D G D A V D Q G T G U G I A M$ H GMV Y L G S L D G R Yi A L D Q K T G KVVVWE R Q DT DLLK T C Y G F S S
 P Q KVLLPVNDGRLI AVNA

$$
\begin{aligned}
& \text { A S } R \\
& \text { G K }
\end{aligned}
$$ SRRLVI GTLDAKLI ALNA SRRVFLPTNDGRLIALDAETGEACHGFGTEGTVDFYEPTA Q Q R L F M P T A D A R L

 A ERVVYLPTADARLI ALDA
 A ERVY F GKVFVAT V
 D A QL F MP TSDARLI AVVPA
 R K R I I L S T I D S RLL I A L D A GKLI Y NMLD DHTVAVDAATGKEVWRTSMDDVVKGVTMTQ $P R R V Y T N T P D G R L I A V N A D N G Q R D A D F G V G T K A P R F E V T S$
 $Y D R V Y V A T V D A R L V A L D Q S T G K V V W D V G A V S G A T G V G A N A$ N K R I I

A T R I Y
 Q R R V L M N T I D A R L V A A D A D T G A L C E E G G G D H G F D P K Y Q L T S

 A K R I I SMTVVDGRLL A SDA GT GA P CAD F GK D G SVN R S Y S S S
 NERLVQTTIDDARLLEDDDSKTGAPCKGFGDNGTVQYYFQTS A GR R FVVPTND GRMFALDAQS GVPCQ GFGNQ GQUDFYEGTS


 QRRLLMNTIDARLIAI NADNGEFCEGFGNHGQNPKYQLTS
 RKRIVSTTNDGRLEELDAATGKLCATFGNQGYVDSYYLTS
E G
QR L FP T G DGRLVAI DA H T GKPAANFGDNG VVDYYQQSS




 A T R V F L P T G D A R L I A L D A R T GE T CK D F G N GEVVKE GYY Q T S $P R R L F L P T Y D A R L I A M N A D N G Q P C T E F G N G E V V K G Y Y Q T S$

UniRef90 H005A7 UniRef90-K6DNR5
UniRef90-W7W6E3 UniRee90_UPI000360DF79 UniRef90 J2FVJ8 UniRef90_UPIOOO4071762 UniRef90-UPIOOO3450793 UniRef90_D6PDZ7 UniRef90 - V5SI26 UniRef90_K2MK76 UniRef90 A5FYU4 UniRet90-W9H3K1 UniRef90_B1Y1U3 UniRef90-10QTC9 UniRef90-UPIO00463E523 UniRef90-UPI0004763B8A UniRef90-T2S1F6 UniRef90-HOPT60 UniRef90_W5J1S7 UniRet90 D2S4D2 UniRef90-N1MPG7
UniRef90_Q01VF3 UniRef90_Q4ZPG2 UniRef90_UPIO00369253E UniRef90-B9Jxso UniRef90-Q13WUO UniRef90_A5VDY4 UniRef90_UPIOOO3B33512 UniRet90_C6XDD2 UniRef90-M4RUl3 UniRef90-D8JTN9 UniRef90-R9BA57 UniRef90-Х2HCX5 UniRef90-UP10004781281 UniRef90-YOKHG7 UniRef90-NOB3P7
UniRef90 F7VAQ6 UniRef90-W8R8L0 UniRef90-A0A021X6D4 UniRef90_A0A024KJ83 UniRef90-A3PJC4 UniRef90 U2YNB3 UniRet90-A4YKW1 UniRef90-W6WAC8
UniRef90-B8ETE2 UniRef90-Q11Z88 UniRef90-E1VA02 UniRef90_B4EZE1
UniRef90_N8ZFM3 UniRef90-X4Z9U0 UniRef90-UPIo00368F2B7 UniRef90-BOVQG4 UniRef90-J2KWZ4 UniRef90-UPI00037C2F8E UniRef90-UPIIO0036AA62E UniRef90-E6WM04 UniRef90-UPIO0037D9EFE UniRef90-A0A058ZJJ6 UniRef90-X5QFU3 UniRef90-A0AO59FJD5 UniRef90-A0A038GPQ8 UniRef90_UPIOOO4767CA3 UniRef90 UPIO00047E766B UniRef90-U2E131
UniRef90-A0A031JW30 UniRef90-F6F398 UniRef90-A0A031JYF9 UniRef90-B5ZNG4 UniRet90_H5Y9X9 UniRef9O-UPIIOOO25573D4 UniRef90-UP1000040B6E69 UniRef90-R4WR81 UniRef90-F6F363 UniRef90 ${ }^{-}$M3KKW4 UniRef90-F6AGG6 UniRef90_UP1000406E502 UniRef90-U1IQD8 UniRef90-A7HWB8 UniRet90-U2LZD4 UniRef90-O89D06 UniRef90-UPIO0037D2044 UniRef90-13ZB15 UniRef90-UPIOOO40C3846 UniRef90-UPIO004650E07 UniRef90-H2J231 UniRef90 W5IU89 UniRef90-F3WY22 UniRef90-I3ZIG0 UniRef90-F3EDD2 UniRef90-AOAO24KH19 UniRef90_V8QTT5

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AP $\square$ AAKGKI MIVIGSSGGETGVRGYVVAFDAETGEEAWRTYT APLYYDGKVYTGVAGGEYGURGYVAAYDSEDGRQDWRSYT APVIVNGKVISGTVSGEMGVRGWVLALDDNTGKELWRGYN APRVFGGKVIVGFGGADTSPRGFVTAYDAKTGKLAWRFYT APRAFKGKVIIGNSGSEFGSRGYVTAFDAKTGKLAWRFFT
 PTVVAENLV AGFGGDEFAARGRLTAYDAETGKTVWTCHA
 APTVYKNMVIIGSAGGEWPDRGF AAYDAQTGKQIWRFHT SPLIAKGKVMVGVSGGEFG|RGFI TAVDAETGQEAWKTYT
 APLIVKNMAITGVAGAEYG\|RGWI AATDLTTQKEVWRTYT APLAAKGKILVGVSGGELGI RGFI QAFDANTGRSLWKTYT APLVVKDMVVVGSSGGEFGVRGHLDAFDLETGRHVWRTYT PPAVTRDLVIIGGHVTDNEPSGVI RAVNADTGKPAWNWDS APLVVKDRVVVGSSGGEFGVRGHLDAYDMETGERMWRCYT APEVAGDLVIVGNAGAEYDTRGYVTAYRDADGKQAWRFFT PPAVTKDLVI 1 GGHVTDNEPSGVIRAYDVHTGRLVWNWDS APLVVRNKVIVGNSGGDLGGNGRITALDPDTGAKVWETFT PPVIAAGKIII GGAVNDNEQSGVI RAFDVQTGALVWNWDS PPIVTNTTIIVAGAVEDNEPSGVIRGFDVRTGQLQWAFDP APRVGGGKVFVGPNNADLGARGYVVAFDLETGNRLWRFDT AVILTKDAVVI GNAGADIGDRGYISAWDIKTGAFKWRFFT APVVYKGKVLVGDTGGRYGRPGFIAAFDVDSGKRVWQFDT APRVVKGKVIIGNGGAELGVRGYISAYDAITGERVWRFFT
 $P$ PVVTPSTIII GGSVTDNEPSGVIRGYDVNNGQLKWVFDT PPVVTGKVVII SGAVTDNEPSGVTRGFDLRSGQLVWAFDT APVVYKGKVIVGITGGRFGRPGFLAAYDVNNGKRVWQFDT
$A P L V A K D A V I I G A S G G E F G T R G F L S A Y G A Q D G K R R W R F N T$ PPVVTSKVVIVSGAVTDNEPSGVTRAYDLYSGRLVWAFDA PPVIANGLVII GGAVNDNEPSGVIRAYDAITGELKWNWDP PPVITDGKI IGGAVNDNSQSGVIRAFDVNTGALVWNWDS PPVAVGGRII IGGAVNDYSQSGVIRAFDANTGALLWNWDS PATIIGNVAVVGDGVATNLPSGVVRGFDARDGKLLWAWDI $P P A I A G N K I T G G A V N D N S Q S G V I R A F D V K T G Q L I W N W D S$ APLYYDGKVF GVTGGKYGSSGFLAAFDAATGDRI WQFDS APVAANGRVYIGEAGADWGANGHI RAFDTNTGQLLWTFDV PPIVTGNTIIIGGSVTDNEPSGVIRGYDVNSGKLIWVFDT TPLVAGHVALGGWVRDGEPSGVVRAYDVNTGKLAWAWDV SAFAADGKVFVGNSGGEMGVNGWLAALDVATGKEIWRAHA APTIAGTTIVVGSRTADNMPGGVIRGYDVITGKLRWAFDP PVVVSSRLLIVGGTVLDNEQSGVI RAFDINTGALVWAWDS APLVAGNLVIVGSSVMDNGPSGVIRAYDAQSGRLVWNFDP APLVYDGKI I I GПTGGRYGRPGFLAAYDAATGKEVWRFDT APLVADGVIMVGGKLNDNEASGVVRGFDARSGKLLWAWDA PPTVVNDLIIGGSVNDNSPSGVIRAYDALTGELLWAWDS $P P Q L A G D Q L Y G T T G G D Q P Q R G K I W A V N A L T G E P A W T F D T$ APAIUGDTVITGSAISDNAPLGTVHAFDARTGEVKWRFNP APTLAGTVVVGGRVADNMPGGVLRGFDVITGEMRWAFD APTAGTTVVVGGRVADNMPGGVLRGFDVITGQMRWAFDP
 PPVIVGDVAVLGSYVRDNDPSGVVRAYDVKSGRLLWAWDS APTLVRGKIVVGGWVADGQYWGVI RAFDARTGEFSWAFDI
APTLAGTTVVIGGRVADNMPGGVIRGFDVITGKLRWAFDP APLIARNLIVIGGWVIDNEPSGVI RA PPVVTDKVLIVGGAVIDNYPSGVIRGFDIYSGRLI WAFDA APTJAGTTVVVGGRVADNMPGGVIRGFDVDTGAMRWAFDP
 APTLTRGKIVI GGWVADGQYWGVIRAFDAKSGAFSWAFDM $P P A V V G D K I V V G G A V N D N E Q S G V I R A F D V R T G E L L W N W D S$
$P P V V T S K L V I Q G G S I V D N G P G V I R A Y D V K G E L V W N F D P$ TPMMMGHAVDGGWVRDGEPSGVVRAYDVRTGDVVWAWDV APTLAGTTVVVGGRVADNMPGGVLRGFDVITGEMRWAFDP
 APLVADGVIMIGGKLNDNEPSGVVRGFDVRTGKILWAFDP APLYAKGTVIIGAQGGEWPGRGPIFAVDAATGKKKWEFDT APLVVKDKIVVGTSGDQSDTPHFLAAFDPETGKVVWRLDT API AWKGLVFI GIAGSDWGVRGRVMAFNAKTGKEVWRFYT PALATGALVVIGGHVTDDAPSGVVRAFDVQNGKEVWNWDS APLMAGTTVVVGGRVADNMPGGVIRGFDVISGQMRWAFDP PPVVANGRLIVGDNVNRNDPSGVVRAYDPITGAGDWAWDV SPLIVGNHVMVGASGDFDNLQGFLRSDDPETGKTQWQWDA TPLVAGNVVVVGGRVADNEPPGVVRAFDVHSGELVWAWDP




K K VIK TAVHA GRNGY|L|WVLD RDGQKLKFVDAYPVNNNTIK QMRKGMAQAGKTGWLYILDRANGELIGIEEKPVPQNANQK KGKNVLVHLNKNGFVYVMDKDTGAMRNAWQYTENMNWAKG VAHKLLVHFDKNGFAYALDRETGE IVRADQFDPEVNWASS KERKVLMQAPKNGFFYVLDRATGEFISAEKIAK VTWADH KTRKVMMQAPTNGFFYVIDRADGKLISAGKIGK VTWADH NKVPVVYVPTKTGD $\quad \mathrm{F}$ V VLDRRDGKPTPAPEMQVPQGPAKG EMRKVLLQAPKNGFFYVLDRKDGKLLRANPFATVTWASH KKHKALVHFDRNGHAYVHDRVDGSLLRAHPFV TVNWAEK ENVPALVGPTKQGD $\quad$ VYVLDRRTGEPIPDVEVPAPGGADPE KMVPAVGEAGKTAWYYIVNRETGKLI RKSQPFDKQ KTIPALVHAGRNGYLWTLERHEDGKI GF $\square E G K P Y Q N V F T G$ GKSALVHLNKNGFVYVMDKDNGSMLNAWQYTENMNWAKG NKVPVIYVPTKTGNIFVLDRRDGKLVPAPEKPVPQGAAKG STEKLALEADRNGFAYAVDRTNGKFVWGLPFVKKVTWTKG RTVKAAVHPGRNGYLWLLERTGGELKFLDKPYVFQNVFTQ DGRKLLGHFDKNGYFFVLDRTNGELVRVVPFVDRVTWGE GKDVIVHLNKSGFVFVMDKDDGKLENVWQFAQNVNWVKG ПKPALLA STKQGSIYVLDRRNGEIVPI NETPVPQGAVEG DGRKLLAHFDKNGYCFVLDRTTGERVRIFPFVDR ITWGE K $\square R P A!L H S P K N G Y L F V I D R E T G K P L R I N P L V R T N W T K G$ HPRKLLLHANRNGFFYVFDRDDGKLLLAKAFVRNDTWASG $\square$ IKPAVLASTKQGSIYVLDRSTGKPIPINEVPVPQGAVAG K GRKVWLHGDRNGHLYSIDRTNGKCNWVVPI A RVNWVKS TTVPALVASTKQGDVYVLDRRTGQPIPIKELPAPGGTIPE KTVPVVYAPAKTGNLFVLDRRTGTPVPAPEMPVPQGAAPG RKRRVVMEAPKNGFFYVLDALDGTLVNKPNNFVPVNWAKE QPRRVVMQACKNGFFYTLDLKTGKLLSADPFTMVNWAKG KT DPAVGQASKTGWFYAHDRATGRLLFKSDAFVPQ KNRKVI MQAPKNGFFYVIDRTTGAFISAKNFVP VTWATH
 KRIAAI YVLTKTGNI FVLNRETGQPDPVTEQSVPQTPTQG TVVPAI YAPAKTGNIFVLDRRTVPVVPAPETKVPQGAAPG $K$ KIPAVGQASKTGWFFI HDRATGQLLKKTDAFVPQ
$T K R N V I C W A N R N G F Y Y V L D R A N G E F L A G R A F V E D V W A T G$ TVVPALYAPAKTGNTFVLDRRNGHLIPAPETPVPQGAAPG
 STIPALVGPTKQGDIYVLDRRTGEPIEVKEVPAPTGADPE

 TVVPALVGPTKQGDIVVLDRRTGEPIPVTEEPAPAGADPE $K 1 P A V G Q A S K L G W Y F V N D R R D G K F L F K S D A F V P Q$ $N G G K Y M A V A N K G G W L Y L Y D R D T H K L I G K Q E T T T H L N A D K P$ TQPALVIPTKQGDVYVLNRETGEPIPVSEQPAPQGTIE G
 GMQHALI QVTKRGQIFL LDRATGK LAEVKELPVPQGAQQG $R L R Q T L V H F D R N T Y A Y T I D R N T G E V L L A N N F A Y Q N W S T G$
 $N K V P A L V Q P T K Q Q E D F V L D R R T V P L L P V T E V P A P Q A A A Q G$ SRQPALI LPTKTGNLFVLNRLTGKPI YPVNEVNVSTESPG $R T V A A V G Q A S K L G W Y F V H D R A T G A L L F K S E P Y S P Q S$


 S S K P A VVGG TK S G QI FV L D R MT T P L T R V E ERRRVK T GT P P TKPA
 $R K \square P A L A A P T K R G E D F I L D R A T G R L T G V E E R A V P R G G D P G$
 ATVPALLLQTTKRGQLVLLNRQTGAPEVQERPVPQEGGAPG V T P A I YIIPAKTGDIVVLDRRDRQLVPAPEKPVPQGAAK G



 G S K P A V V F G T K A G Q i F $V$ V L D R L T Q P L T



 KPRKLLAHASRNGYFFVLDRATGEHLLTSQFVATD WAKG NGKRMLVAGSKDGFLYGIDRDTQTVEFKTAVT





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 LDAKGRPLTTKANEVTPEGVTAK PSVAGGTNWLPPSY DH LDA ATQPFSDMWGGTMLDQMVCRDMFKRMRYFEWGGLAV DRAAP DQPVSADSYEPPMLQGKDLWGATFDDQMMCHIQFH

 DHLSPTQPFSQMWGATMFDQLACRI KFKRLRYEGPFTPPS DNLFTAP V DNLFTAPTPEGVT AAPGVGGGVNWSPAAV DHAAETQPDSDMWGATPFDQLMCRDQFKSLRYFNWGSIAMV EHYSPTQPFSDMWGGTMADQLLCRIAFHQLNYMNF $\square$ TLPF
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## \footnotetext{ 7 

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480 TLTGGRWAKGAMGEVVAWDLKTGKQVWTHKYPTFNWGPLL QP TVKKSPSRGTVTALDVKTNKQVWQKKWDADAYSGLL AS D T S Y T S E L DA WDVTK GQK A F GLK ER S A DY G GVL V QTE A WRVDLP GNWP



 SSLRRFRDGVDASKEVQAWDLKTGKKAWTHTFQDSANWGPL
 F WT G G GP S QPVRITVTAIDVVTSGKI A GKFETPFPNLGGGIL

VREGAD HIGELQAWDLNTMRKVWTVTFQSPNWGSVL



 S PMGLPCQAPAWGYVAAVDLTTMQKTVWMHKNGTPSDGGGTF


 D DLY DPAADKRREVL RA WDPVARKVVWERVTS QGYD GGAL YTSSSEPA EEPRWGLLSADNLADGKIVTWQHKTAQP LVVGGVL ALDPTDKATFKALKAMVAWDPVTQKPAWSFEHGGPWNGGVL

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 A S A G GLVVGQGQVD GKFVARDAKTGKELWSFKTESPVVGAP
 S S A G GLVF Q GDALGMFTAYDKDTGEALWQFNTYTSMLAPP IV D G G L M F Y G S K S G H F R A V D R D N G K V L WS R K L G S G I I G N P ATAGNLVFT GE GNGWFDAMDAKTGKRLWRFNLGAGVNAPP ATGGGDVMR STA GNVVFFIATA DNYLRAFNMSNGDQQLWQARLDAGAGQTP T T G G GLVVFMGGTDRYFRAFDARTGRELWK DRLNS GV IAP P
 T A S GLGFLGTLDQYLRAYDMRDGKVLWEGRLDAGACTTP ATAS GLVFHGT $\square G G K L I V R D A D T G K L L K E \square D T G S S \square M A A P$ T T A T GLV I F GE E G GA L MAA DAVT GK P L WS FP T N Q T WK A S P STA G GLVFSGGAAGFV NADHDETGEAMWRFNVGAGDHGNP
 STA GNIVFQGGGADGVLRAYRASDGVQLWSFKTGSAMAAA P ATAGGGLVFTGE GNGNFAAYDSSNGRLLWQAKA DAGVVAPA STSGNLVFGQGTADAHFAAYDALTGKRKWRFYTQTGVVAAP STA GNVMFVGTQDNYLRRAFNVSNGEQLLWEGRLDAGGQATP ATAGN1MFVATQDNYGRAYDTSNGDLLWQTRLAGGQATP ATAGNLVVFTGEGNGQFNAYHTQTGELLWWQGKSDAGDVNAPP SSA G GVVVF SVVA D GII F A LDD SK T G S EL WR A T L G G K A Q S T P


 IT K G GVVVFLGAA DNYLRAYNLTN GRELWKARLLPAGGQATP ATAGGLVVTGEGNGFFDAFDAASGADLWRFNCGAGVNAPP $P$ T A G GVVLFTGD Q NGDFVVLDDAK NGDTLVK F RTGGA A A G GVV

 ATASDLVFYGTTVDWFRAVDAWTGKVLWSQKLGSG\|IGQP ATQGGLVFFATQDYY LRAFDSSTGKELWKSRMPVGSQGTP
 ATAGGLVFTGEGVGDFSAFDATTGQKLWSFNCGAGVNAPP $L T A S G V A F L A A S D D Y$ RA $\operatorname{L}$ DVVATGAQLWQQRLDAGGGQATP




NS A G GVTFIGAADNYMRAFDTATGRELWRDRLPAGGQATP
 A T Q G G L V F I G T Q D F Y $L$ L R A F D S G S G K E L WK G R L

A

 T T Q G GLVF V G T Q D Y Y L R A F D S S T GKEVVWK R L P VGS Q G GA
 TTRGGLVFIGGADAVLRAFEST TGQQVVWQASLLPA G GNATP
 STAS GLVFFG TQQNYLRADDSSTGKELWRARMPVGAVAAP



 $G \square P Q G L$ FFA GT QDF Y L RAFNSHTGAEVVKSRDPVGS QS GP T TA GHLLFSGDTQGNLLFALDPATGKTLWHTRPGANLSN $P T A G G G M V F T G G D G N G N F L A L D D S S T G K E V Y K Y D V G G S M G G G V V$
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DYAAAYRYGNA NRLLVFK $\square D G G D P \square P P L E D A$
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AFPGLRADTNGPPR RFAFRMDARAAAPAMTTASAR PPSSAAYANRNANR\|LVFKLGGGAPMPDKR

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UniRef90_UPIOOO2DA6653


AAPSANDWASYA $\square D P G G A R H S P L K E \square T P Q N V G T L$ DPEQNDTAWPSYNQDYAGQRYSTLKQI DTKNVDKL DAAGDEWTSWGGDKGGSRFSRLAQITPANVGKL
VAAYHDASNWTAYAGSNLSSHYTPGAQITPDNVKQL K K PV EKGA TA DTQGWDYASKDYAGQRFVALDQ

TDSVNP AVPVAGAVWDSFHGQLNAQKYSPLDDQU

$$
\mathrm{T} D \mathrm{~S} \stackrel{\mathrm{P} \mathrm{~V}_{\mathrm{V}} \mathrm{~N} P}{\mathrm{P}}
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SASPASGDWAAYGHDDSQMRYSPLSEI TPQNADQL
A GA A
KVGADWPAWGGSDSAQRYSPLTQU
TSETWATFNGDLRAQKYSPADQ TTPENVGD
ATAQDWTSFHGNLAAQKFSPADQITPDNVSAL
PDGDWPAYGRNQEGQRYSPLKQLNTDNVHKL
KTGADWPAWGGTDSAQRYSPLTQINKDNVGRIL

EDAK $\square P \square P S G K E W D S F H G Q L S S Q K Y S P L T Q I N K D N V G K L$
SQPATPLVPSSATWDSFHGQLNAQKYSPLTQITPENVGKL
 ADEWLAFGGSNLGQRFSEAAQQTPRNVGQL


LPPSALKAQNWSEY LGGPDSAHYSPLKQDNSRNVNKLL
NDSWPTYSGDYTGQRYSQLNQINAANVKNL
D S WP TYNGDYSGKRYSALTQVDRSTVKNL
KA GMDWPAYGGSDAAQRYSPLNQTNKTNVGQL QPDPASDGVADADWTAYGRTVGGDRYSPLGQITRTNISHL ASSNSTWULGAKNYDNNRYVDGGQUTPANVAQL

KQSRGYPLF GYDYGQTRHVPFKEITKDNVNQM
D G DWY TYGGSLASQRFVNSTQITPQNVKDL
TTADWPTYGGDASAQRY SAALSQITMPDNVGRL
D $\square$ S F A Q QP GS A WK DYGGGGPESSHYSALK Q


LQA GSVPD G D WHHYGRTLQGQRYSPLTQMNPGNVAQL ADQDWPAYGRNQEGQRFSPLKQINADNVHNL ADAGDKDWPSYNKTLTSNRFSTLDQITAANAANL QKESGGWKDYLGGPDGSHYSPLTQINASNVSRM A A A A GTEWPTYGGGPSAQRYADLNQINTANVKDL PVAPGAEQKDWAHWGNTPAGNRFAALDQLNKGNVDTL
PTTDSWVTYNGDYSGRRFSPLTKTTAANVKNL
PASAAETPWPAFGHDPSNRNFSDLTQNRDTVGRL
HPPADAWPTYNGDYSGRRFSDLKQVDQKNVDQL
PVEASEDWPTYGGGADATRYSPLDRITPDNVAQL
PAPPADGNWITYNGDYSGRRFSPLTK

> VDKTDGPEDWEFFGRNAAGTRYAPYTQ ESAESNSGADTQWPSYNLTADGQRFAAADQI
> SDAPAPGDWAAWGRGSSASRHSPLDQ1 QEMLSG AGKNPANWP
> DPKLISPPNAWLTY GNYQGWGYSPD NKDNVGD
NERLLNAGNEPQNWLTSNGNLESWRYSRLNQQNRDNVGDL



#### Abstract

K|L|AWEYQAETGDSNPFTP|L|Q|V|NGVLYFT $\quad$ TPDH|V|WA\|DA  $K Q V W R M D T P E E D T Y E D T P I K V G D T L Y A C T$ $R A V C A Y Q V G Q T G A G T F Q P V V Y A G T \frac{M}{M} V T T$ $P Q N V I A A A D$ RAVCAYQVGQTGAGTFQPVVYAGTMYVT- PHNLVLALD ERVWSFRTGDLYSPENTPLKVGDDLYICTPMVSSTIALDA  ERAWTYHTKQGTAFQVNPLKVGNRLFLCA GNNDVDALD  AVAWQYRSGEAETFETTPILAGGHLVFCTAF NQVIALN KPVWTFHTGDTPEDQQTPLQVGDRVFLCTPH NNVIAVDA 


$S L A W T Y D \backslash P G G G T V K A T P L Q V G G \| L Y F T T \quad P N H V Y A V D A$ $R P A W I F Q T G V T G Y F Q A Q P V M V D G T L Y V S T T Q N N$ VAADD KVK WKYRGIGNPVIKSTPLMVNGVLYLT DPDHDFAVDA RPAWTFRTGDSGPDQNTPLQI GDTLYTCS RNNRIAADD QQVWQF RAGDMYAAETTPI KVGDHLYLCSA KNDLLSLD K LAWTFRVTTTTGASATPLEVNGVLYFTVABSHVWAVDA AEHCRDKLDDAGSFHTGLVQLDGVLYDTTAQD TDALDA KRVWVYHTTPNFGNELTPIKI GDVVYGCT $\square$ RHKVFAI DA K VAWTYRTGEDQGHVVTPLHVNGILYGCT QSSKLFALDA
 EVAWTYRTGDKYSPENTMLK G


## \section*{ <br> <br> } <br> <br> 

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RKAWTYHMRPFSASE

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R TGHQTWHYKWKSQGGT
100
110
120
$H T G N R G V G \| Y N N$ ADTGKSIWRVDPKA TAVSHVTCRSVGYYDIDKAVAPAEC ADSGETLWKFDPQVEENVQHQTCRGVSYYGNTFENASKQC

AETGAVRWRYDPHVPSHVQHLTCRGVSYHDANWPGATRSC R T CR PRWTHEWKLID G IVRFVPN NRGVVA A TGLEEWRFDPGVSDDADPYGCRGAAYYEVPGAAADEAC | PVTGKQKWKYDPQTESTREWKRCRGVSNENASNGVTA GQC |
| :--- |
| $P E T G R Q L W R H Q P K A D L A G V Y G L V C R G V T Y Y Y R V P Q Q G D C$ |



 A T GKQ $\square W K H D S G V K Y E S \square P Y A C K S D T W Y T S H V V P E G Q A C$

R TAREVWHYTFARSRGGULIGNRGVAILG
ARTGKPLWTYRPRTEK $\square F$ GPPSNRGVAVSG
KTGVEKWRFDF QDEGGHLLGQRGVGMYGRW GDSGKPRWTFDP QARSPIWQRCRSLAYFHDDASAANAPC A GTGREEWRHDPTDSNDAIPYTCRGVAYYANPQAAPGEPC ${ }_{R} T G T Q Q L W Q F D W P S K G G E T I G N R G V A V Q G$
SNCTQRWRHHYKPEQPEVFPVNRGVAYANG

A TGKQKWMFDPQTPAESSPSACRGVAYYENPAVPADQSC | $D$ | $T G E E D W R F D P K A A T N N V Y P R C R G V G Y Y D D A A N T T A S S C$ |
| :--- | :--- | :--- |
| $A$ | $T$ | ADTGKPIWKFDPKAH SAEHDTCRGVGYYAEKTADSAQMC ARTGEEQWRYDPQVAKEAIPYGCRGVAYYEVPGAPGDQDC R GKTGSLI WEYRRKLPSASKFINSLGAAKRSDALFG

HS GKEVWHHQHTKNNAF HIGGHRGAAIYKDT AASGEENWRYDPQVSEDADPYACRGVTYYEVPTDGDTQHC

A SGKEKWHFDPKTDSSFQHVTCRGVSYHEAKADTASPDC A TGQEKWVHVLENRDQAP PTSCKQVWKNTRKPVAHMPFVVNRGATY PDSGRELWRFDPRVSAKGSSAVRTCRGVAFARTEGAGRC A ANGKQRWRFDPQTDPSVAATTCRGVSYY QAPQGTAEC D D GKK LDWSY DSNS TAPNWQRCRGLGYYQNNSENSTASC
A ATCREKWVNTWKMEGSPDSKSNRGGA A ATGQEKWRFDPKTDPSFQHVTCRGVSYHDQAPATAPAIC $P A T G K E R W R Y D P K V D D K W D P Y A C R G V S Y Y S D P G V A P T E A C$
$A$ A TGGEERWRFDTQSTQEAPALKSRGVAYWEADEPVAGNAC A ATGALAWRYERELPADLDEYMPFTQDNRNLADYD
A LT GDTI WTMQRAAPPRRLTQPRGLALY
PATGKEI WRHNDNEKYEAI PYACKGVTYFTSSQVPEGQPC
 A TTGKQKWTYDPKVAD NPDKGEPKEGETYTPGTPNVWSIM PA G GEKWTYDPK ARLEALTQPAMKNRGVAYWQDGEAC PATGTEDWTYDTGSQLTQPGGLKTRGVSYWESASPSADEPC
 PATGKEKWRFDPKTDKSFQHLTCRGVMYYDQTKKSTSTQC PETGKEKWTYDTKVAETQPALKSRGVAYWQEKAPQQGVAC

GATGKTKWVFDPHVNPGFQHLTCRGVTYHKSDASPAPDEC PGTGKEKWHYDTKSSRKAPVLKNRGVSYWQAKNPVAGEAC R TGSQDWRYDW VDHGGHLIGQRGVGDWKSTA A TGRQQWHFDPQVPPAAFSATCRAVAYHEAQQAPAGEDC AKTGRQDWKHDSGVKYESDPYACKGLTWYTSKDVPEGQSC PETGETIWEFDPQTQGADDFSGWAHMTCRGDAYYDAAN A D GRERWRFDPKVRNASDPYACRGVAYYEVPATAQDAAC



RD GRQLWHYFWKT
K G GTH $\square$ GNRGLGMW


AATGEERWRFDPE DDPNRQHQTCRGVSYAGTDDQAADEAC A SGKEKWHYDPKTNESFQHVTCRGVSYHEAKAPEVMADC NDCTLNWRVHEDYQPATPQGVSRGAAYLDG
 D TGTQRWKFDPQGWQRCRGLGYFATPVADVSAQPAAAVC VRTGAVRWTFHTIPHPGEKGYAWKTAGAANNWAGMTVDID

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UniRef90-UPIOOO47EBCDE UniRef90_UPI00046FA266 UniRef90_J8VH99 UniRef90-E3T715 UniRef90-B1LYJ2 UniRef90_UPI0003B68030 UniRef90-M4S7T3 UniRef90-A0A017HL94 UniRef90-13ZLW6 UniRef90-UPI0003B75B8C UniRef90_E6WME3 UniRef90-T2H954 UniRef90-C7JE86
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HERDFDPVNDGRMFAVDAQTGKACPSFGNNDHVGGYEPTS QK VVYLGTVDGKLFALDADSGKPCTGFNTDNAKFPLS ILQ

 HNRLIVGTLDERLLAVDAQTGESCTMFGDNGQTNLLTGLGG WTRMMEGTLDGRLIAVDAATGKPCAGFGNGETPPGYSUTS


ATR पEGT四GR\|IVDARTGVPCPAFGTNPYPGMVSTTS RTR YSPVADVRMVALDAETGKPCEDFGDHGFHGFHFITS GKVYLATLDGHLIALEATTGKKVFDKVEVSDTANSFYTM DQRILLGTLDARI KTRVI STTLDARIVAVDLRDGKPCADFGGAGGKPGYSPTA DRRLIVASVDNLVELNAETGEPLSSFGTGDGREGLGSYN PSVDFYGAFANCVIALNAQTGKRVWHFQTVHHDWDRDIPC KTRLIQATLDAKIIAALDAEEGVPCTEFGENGMDDWYAVTAA ADRUGQNLYGNCVLALKASTGEYDWHFQTVHHDWDYDLPA ATRTYLPTSDARLIALDARTGRTCPDFGEDGAVDYYYSTS PRRILLVNDGRLI ALNAENGKLCETFANDTKPGLYEPTS ALFRGAQDGRVLAYDFKTGERLWATSHADKKGESAPA KDRRIVVASGFLHAGDALTGKTVESFGIDRAPIPGASRT ATRVFLPTGDARLIALDAKTGETCKDFGHQG
RGVIYVPTGSDSLLALDANTGKLIWHFGVHHDDWDRDFPA DGKLFMPTADGRLIALNDETGAVCTGFGGGDNPGSYYSTS
RIITVRG

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UniRef90_UPI0002DA6653
 TPVIMGHLTVFGTWISDKDASGVVRAYDVRNGKLAWSWNA
 P P L V Y D D L V FI G P A GS ENADR G WVVGA F RLLSDGAPVWR F DV $P P T V V R G V A V M G A Q V A E N S P S G V V R G Y D A V T$ G E LVAWA WDLL $A P D V A D G V I M V G G R M N D N E P S G V V R G Y D V R T G K L L D W A W D P$
$P P A 1 / R D V A$ $P$ P LI Y D DLLVLI G P A GS E F A S K G W WV GA F RLDS DGEEPVWT F N T


 $A P L I V G D K V I T G N S G G E F G V V G A V Q A R N V D T G E D I D W E R P V$
 $P P L V A D G L V I V G V T G A G Y G L H G W L A A Y D A K T G B E R W R W Y V$ A AVIV VKNHVLI GVGGDAMDVRGYLEARDPETGEDQWRWWS $G P L V A R N L I I, ~ G G W V V D N E P S G V I$ RAFDVRS GELA WA WD L P P A V R GVI VTGA QVS D NAPS GVI R GY D A V T G E L R WA WD M A PVIVVKNHV MVGVS GDDFDDPGYI EAHDP ET GALLQWRWY T A P IVWQ G L L II G SA GS D WGVR GRIM A Y D Q A N GREIDWRFNT
 $M P V V M G H V A V I G G W V R D G E P S G V V R A Y D V R N G S L V W A W D V$ A P QVV F GLLII GAAGGDWGTRGRVMAFDAETGREVWRFNT
 A PVV HD GTI YT GSAGGEYGVLLGFI A A LDDAES GDM V WQT DT GPIVVDGVVIAGSTCQFSGFGCYVTGTDAESGEELWR APLI I RNHVIVGVAGDFDNLDGTLRSFDADTGKPQWTFYS A PVVVRDVVVTGGQVLDYPPS GVI KGFDAVTGELEWAWDA

 A P LA A WQ GVVVMMGVA GS DWGMRGRVVLADDAKTGRELWRFNT P P AIIARDRIVVAGWVADNEPSGVI RTYDVHTGALVWAWDA


| T |
| :--- |
| P |

 A PTVVRGIIVTGHQVLDDAPS GVIQAYDAVTGVLRWAWDM P P TVVVGDRLI LGGWAGKDWAPA GTVVS IN A RTGEREWT F E S PMLSSET DVMCPRRLLYLPTADARLIALNADTGERCASFGN GP VVVNGKI DS GCEPSAGPEACAVVAHDAES GE LLWRT LD

 S P DYYGG

 $P P V I V R G V I V T G H Q V L D W N A S G V I M G F D V E T G E L R F A W D M$ PGVVTGSTVVIAGSVTVNEPSGVIRGYDVNTGKLLWVFDT


 GPAVVGGLVIVGQQVSDNAPGGVVRAYDAVT GALRWAWDA
 $P P A \| V Q G V V V T G H Q V L D D A P S G V I Q A Y D A D T G A L R W A W D M$ S P D YWG G V R R $\quad$ R D Y D D G WS S A VA V L


$P P V V V R G V I V T G H Q V L D W N A S G V I Q G Y D V V T G Q L R F A W D M$ P PMVAKNRLI TGGWUVDFEPSGAI RAFDATTGA I A WA WDA
 APVVYR DTVVVVAHQTVDFGPPGVILKAYDVRTGALKWAWDA



 $P P N L V N Q N G Q T \square D A V A Q \square S K Q G F V Y$ I LDDRDTGEQAW $P N L I R D G K W W D D A V A Q T S K Q G Y V F V F D R V T G E P D W P \square E Q$ $P P V V A Q Q L V I D G G A V N D N S P S G V I R A Y D A R S$ GABVWNWDS P P I I T D K TIV VMA G SVVT DNETSSGVI R DFDDVNT GELLLWAFD

 $V V D L K T D M G E V K E G Y Y$
A PVLLKVKRDTDDAVAQTTKSGFVYVFNRTNGVPLFPVSN $P V V V T Q D M V I V G G T V L D N E A S G V I R G Y D D E T G D L V W A W D S$

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 Y S T A LVVA LDDVTTGKPRWHFQTVVHKDVWDFDLGSQAK Q G DM NAWAPLAYDAKLDIVYVPTGVGTPWGGDRTELKERYANSM

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 $V A L D A R T G A L R W H K Q T V P N D D H D W D V T H A G P L Y T$ T T T G G G $V$ A V D A LTT G D DVVWHF R TVVYNDVWD Y D L G S Q P S L V D F P TA D G $V A V D \triangle K T G K E R W H F R T A N D D Q F D Y D V S T Q P Q L Y D M P Q Q D G$ LALD AESGAVRWSF QTTHHDLWDYDVPAQPTLVDLPG V AL N A E T GKMVVWY F Q T V H H DL WD Y DV A S P P LLL F D V V R N G

 $\frac{L}{T}$
 V A L N A D T G K M V W W F Q S S P N D T H D W D A T Q A A
 $V A L N P D T G K M V W Y F Q A S P H D T H D W D N V E T P I L E D A K T D D G$ VALDVAT GRERWKF QTVHHDDWDYD LPA QPALIDVAD GR G

 VA L D V T T G K PR WVVY Q F V H N DVVWD Y D SPA QP S L V D FP T D K G



 FA $V$ VK P KT G E V V WK H Q T L P R D N W D S E C T F EMMMV V
 V $V$ A $L$ NVET G LIPE WHFQTA HKDVWDYDPGSQPTLLIDFPTGKG $V$ VLDARTGALLKWYHQQVKAND GDDHDLGAAPTLFRSPD

 $V$ VL DARTGGIKWWY QAVKNDPWDYDLASAAVL Y Q S K K
 $V A V E A A T G K E R W H F R T V H H D L W D Y H I G P Q P N L V N W P V A G G$



 I A L D A D T GE RVVWYY Q H L D D N WD L D HP F E RLLLV DTVVVA P D



 TAAAD DETGEILWS QQLLI H H DI WDYDTVAAAPTLI D VEKD G





 $F V L D A R T G E A V K P V Q E R P V P A G T L P G E R Y P Q S V G M P N F A G$











 $L A L D A R T G K Y L W H Y Q D I H H D V W D Y D P D A A P Q L V T V K \quad H D G$
 YI R S M DVA ELLMT IVVERDPADFEAETVLLQK GATLY QNYCAA




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L VPALIETTKQGDLWVLDRRTQPLHKVEEQPAPQGGVEP

S STVPaLI ESMDMVVSS QPRKMLLQACKTGVAWQFDAKTGDYFWSKATVEQNSTAS
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$E E T D A G M Q A T K M G F L F V V N R E T E D V W R E V G G D G T V E G$ EEDPALMQATKMGFDFVVNRETGEDVWPREVPGGDGTVEG
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UniRef90-W7VSZ5 UniRef90-UPIO00361942C UniRef90-F8D7P0 UniRef90-Q93RE9 UniRef90-Q026G7 UniRef90-Q1QTN1 UniRef90-A5EEA4 UniRef90-A0A024KD92 UniRef90-X2MGB2 UniRef90-TOJ7K0 UniRef90-B1Y1U1 UniRef90-A0A031JIV3 UniRef90-R0FLF3 UniRef90-H2J1G2 UniRef90_UPI00036DDEDA UniRef90_Q13IJ1
UniRef90_UPI00040A315C UniRef90-UPIO003742056 UniRef90-T2LE76 UniRef90-G4RAR7 UniRef90-N1MQX1 UniRef90-Q70JN9 UniRef90-F3S9E6 UniRef90-L1QEW1 UniRef90_UPI000363EC6A UniRef90-UPI000369C15B UniRef90-Q2CEL7 UniRef90-K8CJH0 UniRef90-B4W9G5 UniRef90_J5AB65 UniRef90-S6J2L1 UniRef90_A4ABA2 UniRef90-V8A8G9 UniRef90-K8Al82 UniRef90-UPIO0047DA1CD UniRef90-UPI0003656CB3 UniRef90-UPI000474E28E UniRef90-K1NRQ7 UniRef90_UPI000375953B UniRef90_UPI0002D713D2 UniRef90-K6YWI2 UniRef90_Q026Z1 UniRef90_UPI00047AF4E9 UniRef90-Q11CH9 UniRef90_UPIO003818B08 UniRef90_W7WA59 UniRef90_UPIO003714287 UniRef90-B5ZIK6 UniRef90-A5G2A6 UniRef90_UPI000405DAEC UniRef90_UPI000329AF5B UniRef90-K9DFT8 UniRef90_UPI00047C4C40 UniRef90_UPI0003B68C6F UniRef90_UPI000373AF92 UniRef90-X7E7P9 UniRef90_UPIO0036E1913 UniRef90-K1LL08 UniRef90-UPI000371651F UniRef90-E2XD37
UniRef90-V4P7M0
UniRef90_S6UQZ0
UniRef90_UPI0003792505
UniRef90-Q1YG06
UniRef90 UPI0002

T DANGAP ${ }^{370}$ P N DKEPKPD ${ }^{380}$ GALVVSPASGGGTNWPPPS ${ }^{300}$
GALVS AS GGG
 $D F T S P T Q P D S D M W G A T L F D Q M A C R \| A F R R Y R H M D W G G L A G I G$ VTVQGTHA DYLSPVQPFRHMWGMTPDDODWCRDCPGVLGGVEWSGPAY
 ESLSKTQPYSVMWGLTPDDQAMCR DWPGYLGGDDWGGVSV EETAATQPFPTPDQAWGPDAAGRAWCRAELSGMAWGGAAY
EHDSPTQPVSTELPLLLNHNLNAESAWGLTPWNWGGGVFW EQYPATQPRSDMWGATPFDQLVCRISFKSMRYDGLYTMP L
 1 NPKTGRPNVIDAGRPGAPSKPVFSSPSFLGGKNWMPMAY YDEKG QPVPNPAKQPQVAGALVTPNQGGATNWYPPSF $S A P L L A Q K N L F A P P T P Q G T V V A P G P L G A V S W P P T A Y$

 LNSKG QPRDPNPAKVAKPNGTLVMPNQAGASNWYPPSY EERAKTQPRSMMWG円SP DDQLVCR $\square$ QYREANYQG DWTAPTQPYSRMWGLTPLDQLICRQYPSWLGGMNWGSVRV EHLSP TQPFSVMWGVSTFDQLYCRIWPSLLGGMNWGGIS I ENLSPTQPSSGYHSLAFP DDDTGLVTVNEMDPHISADERIPFVPGAPGGNDWQPPSY EERSKTQQRSNMWGMSPFDQLFCRIQYQQASWKGMYTPPT $\square D Q E T G K P V E Y D P K L A V P T D A G V H V C P G L L G G V E W N G G S Y$ DYVAKTQPFSDMWGATMFDQLVCRVMFHQLRYEMFEWGG【 E QPWPTQPMPDAMFQPDRADSAVNFFPGSLGGSDWGGGTF VMAVT TQFKQDKAPTTAGSKHCPGNIGGVEWNGPAY | QPDS PGMPNSDAWGMTPFDQLACRIQFKQHGGDHWGGVLV |
| :--- | :--- |
| $E R Y A K T Q P F S D M W G A T P M D Q L L C R Q F P G S L G G M N W G S V S I V$ | $E R Y A K T Q P F S D M W G A T P M D Q L L C R Q F P G S L G G M N W G S V S V$

$P T V A G A H$
$G C P G L L G G M E W N G P A Y$ DHVSPTAPFSADTFRPDRKDTGADMWGATMFDQLVCRVMF S I YPGYNGGSDWGGDAVDPGRANYNDMPNYVQLVPRDEA
$E V Y S P T Q P F S F G Q C S A L W D D L W Y E G M Y D S A G G V Q W G G V A F$ DWTAETQPRRDMWGASPFDQMMCRGQFNSLRYMNWGGVAV 1 DGAT GEVTTNAAVVPDGPEQTVAVCPSQNGGKNFFTGAY
 QP WSVGMPSLHMPDLREQDMWPWDMYPGNNGGSDWGSMAY
 EQAAPTQPLRWEGRFTPPSVEGTDAYPPTTGGSQWGGGAV $E V A A P T Q P I P R H P E P \| L D P D E W T L L W P S F A G G L Q W G G G S Y$
$D Y V T P T Q P F S D L S F R P K K D L S G A D M W G A T M Y D H S L M P R D V$ DVVTPTQPFSDLSFRPKKDLSGADMWGATMYDHSLMPRDV
AVDPVRGVII ANYNDMPNYNRLVPREEANEKGWFPRDDPR EHYSKTQPFSDLNLAPQDKLTDKDMWGATMLDQLMCRVSF EVYSPTQPFPKPA WK WADVVGFGQCTKMWDGQEYNGMYV
 EVLSPTQPFPTMYTPPTTKGEGADTYPDSAGGVQWGGVAF
 PSENPGGULLFPG\|VGGMNWGGLAVDPEA\TNHSRLPNR\| S LDKP W E EYPGYNGGSDWGSMAYNPQTGGLDANWNNTPMY
DWTAETQPRRDMWGASPFDQMMCRDQFNSLDYMNWGGVAVV YPGYNGGSDWGSVAVDPRRGMMCRIQFNSLRYMNWGGVAIV E A PQMLLAHRLNMVTPEQVAKAGPDAQY LLGPNHPAVRM LDEK GRP DRTAPTQPHSDMWGATPDDQLYCRVRFHQLRYFNWGSVAV LNQFGGPKRNPEKDATVGGSL VSPTSGGTVNWEPPAF $V D M K T G R P Q V V K Q Y S N G P D V N T K G U C P A A L G S K D Q Q P A S F$
$A Q R A A T Q P Y S L F N T L A K P D L R E V D M W G M S P I D Q M D C R D Q F$ $H V G K T T \| V Y P A F Y G V V D W Q G I T I D P Q R K I L L A N A S Y L P F R$ QNTEPSGKGNVACPNTNGGVEYNGGSY DVIYDGDPFDKDK HSAVPWDKNKPQWPGTEGGENYAPETY
 EETSPTQPFP

 LEKKYTENSLDNLIKNGKGAMPAFSHDGEDERKAMDAYLF

VE F S A G Q P VHF C P G S $\square \mathrm{G}$
GAEWNGPAYDPQTN EWTSPTQPPFTMPPPFARQRMTKDDLYFGFMTPEEKTHW



UniRef90 UPIO0035DCD5 UniRef90-UPIO0047475FE UniRef90-X0Q6z6 UniRef90_UPI0003B6029C UniRef90 WORIV9 UniRef90-A4WXV6 UniRef90-UPI00046FFBC8 UniRef90- Q1NH95 UniRef90-UPI000379DB1A UniRef90-B21130
UniRef90-12JXB4
UniRef90 B5XQB1 UniRef90-UPIO0047EBCDE UniRef90-UP100046FA266 UniRef90-J8VH99 UniRef90-E3T715
UniRef90-B1LYJ2
UniRef90_UPIO003B68030 UniRef90 M4S7T3
UniRef90-A0A017HL94
UniRef90-13ZLW6
UniRef90-UPI0003B75B8C
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UniRef90-T2H954
UniRef90-C7JE86
UniRef90-W7VSZ5
UniRef90-UPIOOO361942C
UniRef90-F8D7P0
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UniRef90-Q026G7
UniRef90-Q1QTN1
UniRef90-A5EEA4
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UniRef90-ToJ7K0
UniRef90-B1Y1U1
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UniRef90_UP1000375953B UniRef90-UPIo002D713D2 UniRef90-K6YWI2 UniRef90-Q026Z1 UniRef90-UPI00047AF4E9 UniRef90-Q11CH9 UniRef90_UPIOOO3818B08 UniRef90-W7WA59 UniRee90-UPI0003714287 UniRef90_B5ZIK6 UniRef90-A5G2A6 UniRef90-UP1000405DAEC UniRef90-UP1000329AF5B UniRef90-K9DFT8 UniRef90-UPIO0047C4C40 UniRef90-UP10003B68C6F UniRef90-UPI000373AF92 UniRef90-X7E7P9 UniRef90-UPIOOO36E1913 UniRef90-K1LL08 UniRef90_UPI000371651F UniRef90-E2XD37

DPETGLFY/VNADYSFSVFYLLTDTSAHP


 SDRRWDQYGYYNDMPNYNRLIPRDEADEMGARADFEPDY
DKQETLDWPGYGGQNWYVNDI RMAMTGRFPWGVERRMF俍 SPQLSTLVMPATDWCNQLQPAAEQPNPEGENKRGQF FGG
PERQQLVIVVNTAPFVGYLKPTSSAETGEELLPPAGKTMRI


 DGTRA YVQVRHGATTYTVKTVPAAAGRPEIRYTET SPLLTGLFYVNATEGVSVAGTGHGPSPQAGTPYGMGTMLWM

 ADKPWIEYWMGDPRYKNPPPGRNRPQAGLPYGQDVNTGWV ATWSRMIPRQAYDKGMSNGGHEGNAPQLGTPWGDEQGRFL
DEAKGVMFVNDMRMPRMFMGTIRPQIAGPYSGVRIDIVQ DEAKGVMFVNDMRMPLRMFMGTIRPQUAGPYSGGGWEF RRASYKGKYTPPTADRRFIQYPGYNGGNDWGSAAVDAERG
$N P E T G Y V Y V V H Q N F P D V Y W R Y E E Y S G N P Y W G G G L$
N
 ADQPWIQYYNDMPNYNELVPRAVADAKGWYADNVNAGWRV
$D P V N A D Y F G A V D W C G T K K G D A K Y V A G E F F G G E P T L D P ~$ PVGGAMYFGAVDWCGTFKKGDAKYVAGEFFFGGEPTLDP SVDPDRQVATANPMALPFVSKLIPRGPGNPMFGVTLNPFL DVAQHQLTVGAVDWCFISTKTGPDYVRGQLRFGGKTTPAP DLQRGIMVMNSNRLPYTLQVYTGDKKDKLSPLGGARKEPWM
 STM QRLGWAPRGQERGKLGGAEGAGDPQAGTPFAANVNAGWRL DPVSQTAVVNTSHLVQYTKKLFREDFDEADPYGMRLEVAL SPGNNAMYYSGRNTCMDVTVRTLGTVPGVGGGGAYQUAM DPQTGMP DDPHYHPGAGAAEGNGPMEGTPYAITIIAPFWD RQAAYDGYFTPPTADRYWDQYPGYNGGSDWGGVADDPARG
DPEGPMPEMGEADASSPYDHRTKFYAVTMPFMSRFALPRL


Y $\square E Q Q K E A \square R G G S \square S K G E G A G D P Q \square G \nabla P Y A \square D V N A G W R V$ KRLNYDGUYTP
QMIKLWDRASYDKQPKTAGNENGFYPQПGAPYGMSLLNAQ SPDTGLVYGPAHELAFTYKHNEDGFNAKVDFRAGELDATE HQ
DPKKQTATVNTSHTVQYVKपYNGFAPQEGAPYGMRLLVAN SPQSGLMYVNAVEGKADY TLTPRAQVEDRALGDGGARADQRDAPQAGTPYGVARPNWM DQLVTRKKADEQGLVSIDSPAHKPTGGGAEGNGAMAETPY DPERQALFTGAKYLAFVSRLIPRDQPNTGAPYAVELGPLL DRLGWLPREEVRADKGGAEGAGDPQVGTPYAVDVNAGWRL
DLNAPMPESREADPDPYDHMRDKYGWPEPFMSKGGTR ${ }_{D}^{D}$

## D

NPQTGLFYVTSEDAYSMYYLTETDPRGAMGLGG
DPNRDIMFAMPVYLAFEVKQVPTFNENFGAPYAAQMGPFY SPQTGLLYVAEHNSYSMFYLTDVDPRGSMGLGG DPNTKLFYVPTNHVCMDYEPFKVEYTAGQPYVGATLSMFP
DR DEKRQT LEAPGTDPKWNGQGEEPPDYGTPYTAYTNPWD DPKTNMIYLPSSNECGEWRTKNVVYDAGQFYLGGAFPKF DPATNYVLIPGTNKPSDAVAAKDNAMDGKKDGNTFPGT QKAAYKGQYTPPESVRHSIEYPG YNGGSDWGSVAFDPNR RQSNYAGYLTPPSSDKPWIQYPGYNGGSDWGSVADDPVRR

ENKPGAND $\square H A Q T N A \square A A S G S K D F P \square A P Y V N N G N V Q \quad F R$
 GEEKEDLGEKKELEGGKEMLTPQFYMQG GYRWL

## LVm■GEDQWCTTVTLQTKEQMQAAKAGQPWSGEASपNPFN

RKASYKGMYTAPTLGRPYDQYPGYNGGSDWGSVAVDPRRG DPTNSYMFVNDMRLGLANYMIMGVVPQTGTPFGAMRQRFL RPSVESAKNLSPDVAHTVQVEKVVTKDDMPYKNLGYRRF DPVRDVMFSTPAYLAFVSKLVPRDNDNFGAPYAVELSPPT

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UniRef90_I2JQB4
UniRef90-B5XQB1 UniRef90_UPIO0047EBCDE UniRef90_UPI00046FA266 UniRef90_J8VH99 UniRef90-E3T715
UniRef90-B1LYJ2 UniRef90_UPIO003B68030
UniRef90-M4S7T3
UniRef90-A0A017HL94
UniRef90-I3ZLW6
UniRef90_UPI0003B75B8C
UniRef90-E6WME3
UniRef90-T2H954
UniRef90-C7JE86
UniRef90-W7VSZ5
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UniRef90-F8D7P0
UniRef90-Q93RE9
UniRef90-Q026G7
UniRef90-Q1QTN1
UniRef90-A5EEA4
UniRef90-A0A024KD92
UniRef90-X2MGB2
UniRef90-T0J7K0
UniRef90-B1Y1U1
UniRef90-A0A031JIV3
UniRef90-R0FLF3
UniRef90_H2J1G2
UniRef90-UPI00036DDEDA
UniRef90-Q13IJ1
UniRef90_UPIO0040A315C
UniRef90_UPIO003742056
UniRef90-T2LE76
UniRef90-G4RAR7
UniRef90-N1MQX1
UniRef90-Q70JN9
UniRef90-F3S9E6
UniRef90-L1QEW1
UniRef90_UP1000363EC6A
UniRef90_UPI000369C15B
UniRef90-Q2CEL7
UniRef90-K8CJH0
UniRef90-B4W9G5
UniRef90-J5AB65
UniRef90_S6J2L1
UniRef90_A4ABA2
UniRef90-V8A8G9
UniRef90-K8Al82
UniRef90_UPIO0047DA1CD
UniRef90_UPI0003656CB3
UniRef90_UPI000474E28E
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UniRef90_UPI000375953B
UniRef90-UPI0002D713D2
UniRef90-K6YWI2
UniRef90_Q026Z1
UniRef90_UPI00047AF4E9
UniRef90-Q11CH9
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UniRef90-A5G2A6
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UniRef90-E2XD37
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UniRef90-Q026X5
UniRef90_V4P7M0
UniRef90-S6UQZ0
UniRef90_UPIO003792505
UniRef90_Q1YG06
UniRef90_UPI0002DA6653


K WT GLLCKEPPYGG $\square$ TA AD LRSGQTLWDRPFGTPNNGGSV
NWA GMPCWAPPFGE VADDMRTGDVKWRRPMGSPTDGGPA AERRALTKQN $\square R A K L L A W D P V N Q K E A W S V P Y G R \square W N G G T L$

NWLGMPCWQPPFGEVVALDMHTGEVKWRRPVGASQQYGFF YGGTGVGGQRHDRVLKALAPLTGTVAWQHSYPNLDNASIL NWLGMPCWEPPFGELVALDMTT GDVKWRRPWGSPTIGGPA

 $P$ FTRLLCKQPPYGGI RAVDLRSGKTLWDRPFGTPNNGGSV VPCFEPPWARLAVMDLNTKELLWSRPLGSMQHTGPL

KDELSVGLIGNYLTAMDYKTGK DAWRHKYPEAGGWGGL $S P L Q L P C Q R P P W G Y I A A V D L T T G E T V Y K F E M G V P G \square G G P I$

$N P \square Q \square P C K G P V W G T \square T A \square D L V T K K \square V W Q H P V G T T R D T G P \sqrt{L}$ VGPNTGQFNAI DVNTGVFAWRNPSKDPMAGGAL $D I L P N P P N I K P S G N V S A I D V N T G K K V Y E V K T G Q E N R G G L T$ GI I $\square A N Y N D M P N Y N I L V P R A K A D A L G W K P R D E M P D D H G H A$ ILI ANYNDVPNRSQLYASKDANAKAAGKGEGGSSVYAGWR
 VIVANYNDIPNYNQLI DPQEETDWPIITDAPQEGAPY DQSGNPA LQPPWGTLNALNLSTGEYEWQURLGNNEKSGPI TEDGYPGUKPPWGTLTA IDMNTGK $\square K W Q S P T G T E N Y G G P V$

VWGKQDPFGDWAGWVYAVDADSGQWRWRARTNYP $\square Q S G M T$
VVVANYNLTPNYDQLYAVGDPRGTHKGGAEGAGPQEGAPL
 DPEGYPADSPPWGTDSALDLNTGEYLWKDHTGSDNYGGPVV
UniRef90_UPI0002DA6653


TTRGGLTFMSTMDRTVRAFDVRTGKVEWSQEDPGNGQATP $\square T K S G L V F\|G S M D S R V R A\| D V K T G D T L W K H L V D A P A V S M P$ QTATGLIIFGGSMDSRVRALSAETGDELWSDLLEAPAVSNP

VT A G G L I F $\square$ A A A D D L IR A $\square \mathrm{D} \square \mathrm{ET}$ GETVWS DVLPAGGQANP VTA GGVVE DGSMDAKVRAYALEDGKEDWSDVVMAPAVANP ATAGNLVFQGRTDQTFAAFNARSGELLWQDPIGSGIVGGP

MA GGVIFDGASMDAKVRAYSVDSGEEDWSDQVEAPAVANP TTASNLLITGDDQKNAIIYSADSGRVLWHHELTANESGGV VTAGKLAFIGSMDAKVRAYSMDSGDELWESQTEAPVVANP VTRSGLTFI AAQDNYLRAFDTRSGELLWEGRLPAGAQASA ITAGGLTFVATTDNKVRAYDSNTGKELWSDTLPAGGQATP VTASGLVFDAAADDLLRADDLKTGKELWHAPLPAGGQANP TTRGGLTF ISTMDATVRAYDVRTGE $\mathbb{V}$ KWHDTLPGHGQSTP
NTAGGLLFTGDPQGN LVAYDPANGDPLWHAHDG DVSGPV VTAGGVAFLGTLDYYVRGYDLRTGEELWRERLPAGGQATP $V$ V ATA GVFAGDASGNLDAHDAATGKPVWHTRIGBEVTNPP NTAGGLSCYGTLEGYFKCVDAKDSKELFKFKTPSGI DGNV

VTKGGVVFMGTADDY LRAFDLATGQVIWRDRDPAGGQATP STSTGLVFTGLENGDFDAYDATSGKKLWSYDTGSPIDAPP STASGUAFYAELDGTMNALDIKKGK LIWHMKSGSQUKMAP EGAGGMLCKEPPYGGПRAIDVRDGRTLWDRPLGTARRNGP N $\square G T G V P C T A P P Y G G \| R A V S L D T G E T L W D G P L G T A R R N G P$

VTAGGLLF IDA ATDEKLRAFDTKTGQ\|VWEYQLPAGGFATP SP


PTAGGVVFFGDMGGNFYALDAFDGHK $\square$ WGKK $\square G G A V G G G V$
$M P V T G M L C K Q P P Y G G \square R A F D L T T G K T \square W D H A \square G D A R R N G P$ STQSGLLFFGTQDFYLRAFDSGNGN VTAGGLVF IGATDQKMHAYDSRTGKLLWETVLPFAGLATP I TAGGVAFI GT LDYYVRGFDVTTGKQLWRARLPAGGQSTP




EGRLVSNASPADSS

PTTPDVDSASGANG】YVFALPEK
$G Y L I G P K A G P Q E G R V V A F K V G G K A E L P P P R T$

E T K L G D S L V VF A L P

GYKELNQYTELGGS LTVFALP

GRNETQKPNASPATIY
AATDRA $\square \mathrm{D} \square \mathrm{NTGKTV} \mathrm{W}$ TPLPAGGQANP


UniRef90 ${ }^{-}$K2FTIO UniRef90-UPIO003B4D704 UniRef90-E0XW05 UniRef90 B3T1F3 UniRef90_UPI000366A970 UniRef90-F8EB07 UniRef90 H9BX90 UniRef90_D2QGG2 UniRef90-F0EAF4 UniRef90-UPI0004295410 UniRef90 I3ZIN0 UniRef90-UPI0003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90-UPI0003B356E7 UniRef90-S2DHE4 UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90 ${ }^{-}$W0RHH2 UniRef90-UPI0003763837 UniRef90 UPIO0047D039B UniRef90 UPI000365DF6E UniRef90-I2F0S3 UniRef90-UPI00036A68EA UniRef90 A2SG67 UniRef90-UPI00036C8823 UniRef90-N8WU45 UniRef90_A5PD87 UniRef90 W6WNN3 UniRef90-S1RTP2
UniRef90_G7KZV4 UniRef90 G7WQ48 UniRef90-R4W5T4 UniRef90_E6N4G7 UniRef90_UPI000367A40A UniRef90 UPI00032A507C UniRef90- F6H5P4 UniRef90-M5WVT7 UniRef90 UPI0002C34ED7 UniRef90 MOZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90 A0A022R5K2 UniRef90_UPIO00375DFE4 UniRef90_UPI00032A7165 UniRef90 A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPI0003B32839 UniRef90 J2H6S9 UniRef90-W5S519 UniRef90-C0Z464 UniRef90 D8RU75 UniRef90 ${ }^{-}$I3ZJH1 UniRef90-E1RD00 UniRef90_D7CD18 UniRef90 UPI0003B35EB0 UniRef90 S2XQ54 UniRef90-A0Z5N7 UniRef90_F2ZD08 UniRef90 V4XIE3 UniRef90-V4XIE3 UniRef90_L9XN77 UniRef90 C7P4Z2 UniRef90- B21613
UniRef90_E3CY87 UniRef90_V4TEX8 UniRef90-K2DZS6 UniRef90_UPIO003 UniRef90-UPI0004664386 UniRef90 C7NTG8 UniRef90-UPI00028A1DDE UniRef90_C9Z698 UniRef90 MOPL27 UniRef90_-Q01UL0 UniRef90-M0EV56 UniRef90 B8GAJ1 UniRef90 L9XW62 UniRef90-R8BDI3 UniRef90_H2J3S5 UniRef90 M0HEB8 UniRef90_Q63UT0 UniRef90-L8GUL7 UniRef90_B7JC76 UniRef90 C7NRF1 UniRef90-C7NQC9 UniRef90-UPIOO0468812F UniRef90 H1L1B2 UniRef90-B4D7Z8
UniRef90 S8DGN1

$$
\begin{aligned}
& \text { A QSPFSSWEHPAYDEWNTGFSPQTQ } \\
& \text { T NWGEYLGGPDRSHYSALT QITRENVDLL }
\end{aligned}
$$ WP QYGQNTRRGSRYSA L S E I $\operatorname{D}$ T S S NVVAGL

QQKFETTPAQSTEWPEYLGGPDRNHYSPLTQINRQNVSKL WSAYGGAEDGSQYSALKQINRANVKSL

A GAEWP I Y GGDP GHTRYS SLNQ:
K D GTDWPE Y L G GPDRNHYSTLTQ
DAATDAQKAS SNWTHYGGGSPS Q S KYYNNAE Q
D T D WP EYNGNGERSHYSALNQI

I Q A F N I R T G
I R A Y N CK TG
P QLP DVNWTEYNGDGARSHYSSLSQI TSANVGQL
ETGNWREYNGDKAGSRFEPGVNVTLQSVVSM QASAARTDWLTYNGEDTGDHYSPGNQUTTANVQHM $P N A E N P D N W E Y F G R N G N G T R F A P Y T D L T P E N V K D L$

AAGSNDVQDWLNHGGNLLNRRFADETKDSPGTVSRL LIFAASSES DWINHGGDLDFRRYAYKEQINDETVPKL

EVSD GARDWPLPNGDYENTRAAAGSAINSENVGEV QQQSVDWARYNSVPGNWNYSPQTQLNKEN ITK F L ASSESDWLNHGGDLFNRRYAKKEK DSPKTAPNL

A Q N WL L H G GDLLSNRRYARETKDSPKTVSKL WL NHGGDNSNRRYANGEVINPRTVLNM D H T S A E WL NHGGD $\square$ T NRRSAPGELISPRTI NKL

I Y K D NV P Y
A GTRI S P S T A Y QL
 WTHSFGDAGSTKFSNTEWLTPKGVQSL


GLD Q A A THSVTSSQLAKAEVGRL

 A Q T T A A WTSVGQGLTN LDRS QPAEKLS ALNVGRL

SWGVT T N N QRYS QS T S LT AENVD GL $N D L M P V L A E N D P G W S G W G G G \square R N Q R F Q D A D S L G P D T V G E \square$

WLN H GGDLN NRRYAYGEVINPVTVRN】 ASNWSMYGVNPARTNY $C Q N V K V L$

WNGWGADLNNSRFQPAAGLAPDQVSRL
 GHHDDWRYAGQTVVPETRSN

DS QPPPSRTGGW $\square G W G A D \square Y N N R W A P D A \square S S T N E E \underset{E}{S} \underset{G}{\square}$ DE $\square$ QS DATVANNTVF $\square$ GSDSTSGTTSGDGQVYALNATDG


THPNDDVRMWRGG $\quad$ RRR LGYYPEETV PESVS
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R KKTFNAGRDDTA TPADFGGTMY PSWNGYDYAVKA SLKWKF YANKD TTATPTIYNGTIYF PSWNGNIYAIK WSFPDPGDGAYGAAASNPDVGDVVYFQ DDRCNVFALDD GEQWTFEPSNF EGVLGSPAVADGTVFVCVQDEGGLYAVDA


K LK WAFGFP पANRARSQPALGGGADFV GSHGGTVYALD TVEWSRNFHADTSA TP\IWKNALFITT FSGEITAKLN
 AVKWAFTTVGDVTA TPTVSGGVVYFPDSA GNLYAVNA

EFAWAFGMPGTSDMRSYPVVTEDT $\square$ TAATSGH $\square$ FA $\square \mathrm{D}$
ELKWAFAYPGATRARSQPLVHGTVFV GSQKGTVYALDL

RपRWSF YAGKDTSATPAVANGVVYF PSWNGY■YAVNA ALKWTFDA GEQUNSSPAVYNGKVFF GSDNGNUYAVNA

H $\square K$ WAFGFPDTSNANAQPTVVGGLL FVGGGDRKVHADD RWDVFPHRGVQMSPTVSGTSVYVGNAEG LVAMD

A VK WKFTTESDVSA TPTDDGDAVYF PDWAGNLFALKK QRWVFET GDS $\square$ QSSPTVVDGTAF $\square$ GSKDEHLYAVNV

ELVCE QQYNPGVSAAPLTQDGVAYYPT WS GLLVADDY ELKWKFKTESY IKSSPVIDRNGVVY $\mathrm{I}_{\mathrm{K}} \mathrm{KWWDNYFYAINP}$ SLRWNY TMTGDVDGSPVYADGULYAGSRGGDLVALNA


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SD GS VVWKQNQQLTGRKSTVASNDNVTVSRTTPATAD QVDGSLVWKQNLEKLTGLNTTGFIINANWTLARATPTVAE ETGDPIWSRFYNVTEVVGPNG $A$ QTGETQWFQELGQPPKEFPP $\square W E P F F R G H F H Q U H V F E D D G$
$Q P A \vee V$
$P T V A G$

 FTGALI WKQNLSQLTGLNGTGDGVVNVTVSRATPTVAG KHTHKPLWSYKAQGDLLSAPTLLDDV
KHTHTPLWSYRAQGDILAAPYTVCALEARTGGVLWRYQAT AVDGTLVWKKNLKALTGLNATVFF TNGTLVSRATPTVAG AKTGVTKWTFDVASVGGGPAV G
 ARTGAQVWWSFDTGGQVRSAPTASVEPGRVGGVVTDGPAVAA
RETGCVRWSYAAASEVRTA\|VLPWQAGDAQAVP
ALTGEVLWSRNMSIFTNDPGSFAR ASPVISKN ARGGRTL WTFSDASAAPDAAKA
T-TG\KLWQQTLTYVGMPNADAR VSPAVYM
T TGKIWQQTIT YVGMPNA【AR VSPAVYMNE!ILGD
RQSGC $\square \mathrm{KWHNQTERPMRSA}$
VS $\square$ GEVGG
T SGCSHWQYEAGAE
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## FNGALTWEQNपSKLTGLSGTGIVVNVTVAVVVAVS E TGKEIWSIKTDNIVDSSPVISGG <br> TTVRWSYSTGAEVDSSPAVV

ASSGCTRWVFPTEAPVRAA $\square S$ FAS $\square D D R$
tat geerwr
TDGSПLWSHKVADYDGFTGA E TGDQQWAFETDGWIVNSSPA
v v
QRCKVLWETN NTK $\ \mathbb{K} Y K P \square D P \square Q \square G \square V V P \square S R S T P A A D$ D GSLKWKYKTEYVLLSSPV ADGTKVW AKTGQQVWRTK $A$ G

## GDEARDESYRPSGRNNWTTWTAGTS乌GFHGSAA VDD

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 DLLIIGIYGPAVVIGLKRTTGELVW पAHGDNHPAAVVTM DMLI GIVYGPAVVIGVDQATGRLMWSTRLESNPAG VVAM DLLIVGIVYGPAIV:ACDERTGKLIWSTMLDTHEAGL DLLLVGIYGPAVVIAVRRLTGELVWSTQL DSRPGALI TQ
 DKLIDGDYGPAYVIAVARATGQLVWKRQL DNHPAA DTM RGKVYFGDDRGYVYALDQRTGKDVW AKDFDEHPTARHTS
 NGTVYFGGSDGLVYALDASRGSRVALRTLGHNEVGGSPQQ RGKVYFGDARGYLYALEQRTGKLVWARNTESHPAGMH TS
GGTVFVGSDDGSVYALEARTGELQWRYETGSW GGLAFFGDWSGNAYAVEAFTGKLVWKLERADEHPAAVITA DELVVGDQVSGTLVCLRSTDGGLIW TSLLDPHPAALLTM NLSLYGLLGGPARVVALHRKSGRMVWMSEDLDETPGARITM

## RWRFTTGK AVSS AS APA $\square F$ VMDA $\square G T V H A Y R G E T G E A \square W S T E A A D F N T S M G T G$

APVLFFGDFKARVHAVSARTGAADWQKSVGTHADATDTG GKRITTATADAKLVALDADTGQRCSDFGADGRPHADMQTS DGTVYVGSHDSNLYAVDATTGEQRWVFETGDSPHSSGAVF DGTVYVGSHDSNLYAVDATTGEQRWVFETGDSPHSSGAVF

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            W\squareTAGGGLLNTNFQDGWL\DSSNDTQLQMQWSLST
                AQWKGELVWRL\QT DPRPGGAVSS
            |VMGGGRDSKFYA|DAETGSIVKWTFEAEN RPRSRISS
DGVVY|GSHDKNVYALDAATGTKKWAYTTGNGGVVGS
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    FAVVFGDVRANVYAVNAATGALIWKSKVDDHPA AR■TG
                                    YLIAVDTGTGAERWRDKTTGRGETYA
                                    DSPTGGNRWTFATTG RGEAVKA
    ST QPHNGAWDTAVDRQTGLLHWKTQVDSHTAADTTGP DGTDFFGSDDGYLYAVNAETGDEQWFFNTGDLVRGSLTVA

TQS

 WEVLLGDMASGWFFGLNATDGQLVWRT,LLDPHPNAVITM

VAYVGGCYDGDTYADDMDSGDVVWNVSSED DGGTMAVGS DGTVYVGTWGSTLYAVDATTGDQEWTF VYALDLKTGNKLWEFKVEDW

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 PPTLVRGVAVTRAGDS PGVLYKDLIVVGGRDPEPAPPGDDRAFDVRTGSLRWSFHT VPMVYGNIVIVGANTGASGGDGNARAFDARNGDKDWEFSS PPLVVRDVVIVGSAMADHQRPGYVRAYDVRTGELRWTWNP


## A

## A

$P$ GR $V \left\lvert\, \begin{array}{lll}F & E & N \\ F & E & N \\ P & I & V \\ M & P & V \\ P & G & S\end{array}\right.$





PPNLVDGKDI D AVAQATKHGFIFVLDRVTG
PNTI FENLIIVGARVAEGETAGDIRAYDVRTGKLVWTFHT PPII CGGQVI PS DAVLDNHPPGDVRGFDLMTGKQSWVFHA PGVLCKGLLILGFRAPEPAPRGDI RAYNVRTGKLVWSFHT $\begin{array}{llll}T P & L & A G H V A V L G G W V R D G E P S G V V R A Y D V R T G K L S W A W D V \\ P P V I V R N I V T G H Q V L D G A P S G V I Q A F D A V T G E R A W A W D M\end{array}$ GTYYKGHFYVGTSSLESTVRGSFVKLNARTGEVVQNTPT
SGTYYKGHFYVGTSSLESTVRGSFVKLNARTGKILWQTYM SGTYYNGSYYVGTSSLEEGARGSLVKLDAQTGDILWKTYM GLVYVSTVPGTGDVFYAPGGDGVISALDAETGDIVWEFST SPTVVDGTVFFGSND HSLYALDAEAGEERWAFE




 S GTYY A K Y L Y V G V S S L E C T F R G S L A K L D DQ T G SV I WQ T Y M

 $A V L I Q T D R S N P P S G T R T T G E S G S Y G W D L T D G S V D V T G Q T$


 SPVVYNNVAYVGISSEEEGFRGS\|VALNATTGAKLWWQTM $S P T V V D G V V Y \square G S A D K N \quad V Y A D A A T G D K K W A Y P T$ GVVPA GDRLIVPMSNNDCKGHGGVHALDMETGE LDWTTHM

SVKYHEQRLYVP $\square$ S S S E WA FR GSVVA A LDAND GS LFWNSFV A PLI A GDLIVI GSSVMDNGPS GVI RAFNVLTGQLVWNFDP


Q G G L P A S S T ID N H S L Y VS S S N G T L N K ID A Q T G S
 S GSVVYMGAFYVGLSSLEEAFRGSLAKLDVRNGRIDWQTYM SPVI YGDYVY FGSWDKN SPAVVNGVVYVGSRDKN $V$ Y A V N R T D GTI A WK Y A T

$T P V I A D G T V Y A G G D$
GR LDWAVDAVTGETRWKVRT KV Y A L D A A T G D R K WA YR T APVVSDGTVYVTSNDR NI YALDADTGEERWKFED PVIA GNAVYAGDVSSEECSFRGSMVALNANNGE\|LDQTFT


S P AVVDGTVFAGSW NGNLY AMDAETGTEQWRFGT S P TVYK GKI YY GVSS LLE E GAA DLI EDYPCCSF IGTMNA A T NNKLDFA DVKGFLYVLNVQDKNLDSLAHW
$P L A W N G T L Y Y G S G S H F Y A I E E P A P T V S N V N A T N P S G Q N V$ GMTFAGD A A VLA GFPGGGLVALNLQTGEPFWQTPV SATVVHRDRVLVGVSSTENQFRGSFAALDARS GRVEWQTYM P P SVVDGGTVLVTTGKAGRRQEGQVLRVDARTGAIVWRTSLL S P A YYK G I L Y V VA E Y E N P S S G A L WA I D A E T G D I I H V D D R S A TVVA A GTVYVGGSSGSEEDHEAALYAVDAATGDQEWVFEP $S P V V N G Q Q V Y I G G S D N T F$
$T \mathrm{~T} T \mathrm{~K}, \mathrm{~N} D V V L G C R G$

$S G T Y Y S G A Y Y V G L S S L D C T F R G S M V K M N V R T G K I Q W Q T Y T$

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UniRef90-UPIO00375DFE4 UniRef90_UPIO0032A7165 UniRet90-A3T3D6 UniRef90-U1QT89 UniRef90-UPIO00376BCC9 UniRef90_UPIooо3B32839 UniRef90-J2H6S9 UniRet90-W5S519 UniRef90-COZ464 UniRef90-D8RU75 UniRef90-I3ZJH1 UniRef90-D7CD18 UniRef90-UPIO003B35EB0 UniRef90-S2XO54 UniRef90-AOZ5NT7 UniRef90-V4XIE3 UniRef90-V4XIE3 UniRef90-L9XN77 UniRef90-C7P4Z2 UniRef90_B21613
UniRef90_E3CY87 UniRef90-V4TEX8 UniRef90_K2DZS6 UniRef90-UPIOOO380B60C UniRef90-L9WJ47 UniRef90_UPI0004664386 UniRef90_C7NTG8 UniRef90-UPIO0028A1DDE UniRef90-c9z698 UniRef90_MOPL27 UniRef90_Q01ULO UniRef90-MOEV56 UniRef90-B8GAJ1
UniRef90_L9XW62 UniRef90_R8BDI3 UniRef90 H2J3S5 UniRef90 MOHEB8 UniRef90-Q63UT0
UniRef90 L8GUL7 UniRef90-L8GUL7
UniRef90 B7JC76 UniRef90-C7NRF1 1 UniRef90-C7NQC9 UniRef90-UPIOO0468812F UniRef90 H1L182 UniRef90_B4D7Z8 UniRef90_S8DGN1


DPTAPQETGETNPAGAKRMAPAGA
QNPGDTRPLATD
RQYPQDTP
GSALIRSSPTVNGTAFVGSRNSKLYAVDAATGTQQWKFKT GSALI RSSPTVNGTAFVGSRNSKLYAVDAATGTQQWKFKT DLEAEFEHVWSSPAVA DGTVYVGGKDGTVYADDADD GDSDRGGPTVVDDTLYVGSDDAAVYALAT SNYTGNPHSLSLKSTAIAPQSUVVGDQNSGTLLALNKTSG ENWVASSPCVSGGLVIFGSYDSRVYADDAATGKLAWRFTT QARTMSSPATNNNTVYIGSHDANLYATDAKSGKLKWKYPT GAEVDSSPVVVDGVVYI GCRNKNVYALDAATGAKKWAYAT GDEVKWASATVDGVVFGSHDDNLYALDAKTGDQEWRFET

PKPVHSAPLVGGTVYFGSLDEHYAVRARPGEPPAEDDR GEAIEASPFVSGGTVYVGSRDGKVYALDAA
GGDQSSSPTVRNGTLFVGGSNDNVYALDAETGEREWTFDT VPDNHGRTDGYSGN TGGVHSSPTVRDGTVFFVSGNETLYAVDA EDEIRSSPLVSGGLVFVGCYDTNIYAI DAVRGEFRWKYAT DDRVTSSPAVVDGTVFVGSWDGNLYAVDTETGTERWHFET
 $T$

SPPVWGSSPSVDDQLGVVYVGTGNNYREAADCAVARQEQGT MWGOAHPSPTDDDEYGRLSGSNDGAVYCWKFPCDEFDWK SDSVDSSPTVAAGTVYVGSDDGTVYAVDTETGDQEWAFTE SDS VVGSPTVAAGTVYVGSDDGTVYAVDTETGDQEWAFTE



## UniRef90_I3ZJR5 <br> UniRef90_K2FTIO <br> UniRef90_UPI0003B4D704 UniRef90_E0XW05

UniRef90_B3T1F3 UniRef90-UPI000366A970 UniRef90_F8EB07 UniRef90_H9BX90 UniRef90_D2QGG2
UniRef90 F0EAF4 UniRef90-UPI0004295410 UniRef90 I3ZIN0 UniRef90_UPI0003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90-UPI0003B356E7 UniRef90-S2DHE4
UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90 ${ }^{-}$WORHH2 UniRef90_UPI0003763837 UniRef90_UPI00047D039B UniRef90 UPI000365DF6E UniRef90_I2F0S3
UniRef90_UPI00036A68EA
UniRef90 A2SG67 UniRef90_UPI00036C8823
UniRef90_N8WU45
UniRef90_A5PD87 UniRef90_W6WNN3 UniRef90_S1RTP2
UniRef90 G7KZV4 UniRef90-G7WQ48 UniRef90_R4W5T4 UniRef90_E6N4G7 UniRef90_UPI000367A40A UniRef90_UPI00032A507C UniRef90_F6H5P4 UniRef90_M5WVT7 UniRef90_UPI0002C34ED7 UniRef90_MOZJV4 UniRef90_D6U7D9 UniRef90_D6U242 UniRef90 A0A022R5K2 UniRef90_UPI000375DFE4 UniRef90_UPI00032A7165 UniRef90_A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPI0003B32839 UniRef90 J2H6S9 UniRef90_W5S519 UniRef90_C0Z464 UniRef90_D8RU75 UniRef90_I3ZJH1
UniRef90 E1RD00 UniRef90_D7CD18 UniRef90_UPI0003B35EB0 UniRef90_S2XQ54 UniRef90_A0Z5N7 UniRef90-F2ZD08 UniRef90_V4XIE3 UniRef90_L9XN77 UniRef90_C7P4Z2 UniRef90_B2I613
UniRef90_E3CY87 UniRef90 V4TEX8 UniRef90_K2DZS6 UniRef90_UPI000380B60C UniRef90_L9WJ47 UniRef90_UPI0004664386 UniRef90_C7NTG8 UniRef90_UPIO0028A1DDE UniRef90_C9Z698 UniRef90_M0PL27 UniRef90_Q01UL0 UniRef90_M0EV56 UniRef90_B8GAJ1 UniRef90_L9XW62
UniRef90_R8BDI3 UniRef90_H2J3S5 UniRef90_MOHEB8 UniRef90_Q63UT0 UniRef90_L8GUL7 UniRef90_B7JC76 UniRef90_C7NRF1 UniRef90_C7NQC9 UniRef90_UPI000468812F UniRef90_H1L1B2 UniRef90_B4D7Z8 UniRef90_S8DGN1

270
D G S P Q M S N/L
G G S P Q MS N



 NWS GMSVVDRPRGGLVVVPTGSAAFDFYGGNRKGSNLIFANCLL NFWGTA SYDPALGLIVYVTGNQTFWGADRS LAAAETYNASV Y V P T G S A A WS GMALDEKRGIVYVPTASPKYNFYGGNRAGNNLFGDSL SWA GLTLLDAERGUVFAPTGSASFDFYGANRDGDDLIANCLD
 N NWA GMADDQQRRGI LYVPTGSAAFFYGGNRKGQNLIANCLL



 IS PF A E NRDEELLATGFRKSRYEGSYTSPYSRRQGTVVVFPGT

 MWTRASCDDEQGLVYLPLSTPANDFYGGQRKGDGLFGES
 NMWTTASTDEEL GLVY LPMGNSAYWSSDRSPQENEFSTALL
 TGNPKY SVTB

QT GDEQWAFETMGDMG
 D DWGY
FRGSMVA L DAAN GTEELWRYYTIDSQSA E

$P V W N S P T \square D A E R G L L Y V G T \quad G E G Y T S P A V T M S D A V$
VAWAT LS A DVKNGLVVVPFGNASPDETGTRRNTEKYRDAL REKVVPS PTVVNGTVFVGSYDTS
 GS E EWRFT DPEDWUVSSPTVANGTVYYGS GSFFNEACATVV
 $H K N V H S S P A V A D G L V F F G G V D G Y$
GNLYTAPAEVLQCQEKQNNQTTKPTHPDQCDSSDDYANS
KRFI IS APAVSGNNVY $\operatorname{CHGSWDKNDYADNKLTGSLKWRCAT}$ GAE I S SVPAAA D GVV Y
$N D R V R S T P D V A D G T V F F G S H$
WSAPT $\square D V Q R K A L Y$ VATSNSYADPATDTSDAVL
A A P A RPVRTPRWRVQVPGVGNSTAAVADGTVYQTTYRDLD T GDKKWAYTTGA GVVESTPVEAGGTVYVGS GDTQV DRTVTTSPLVVNNLVFVGNDAGT
LYTGTGNNYEVPDEVKACLATATMAEQPSCFSSQDYFDSA ET GDEQWAAETGAPDRSSPTVADGTVVVGSAEGTLL
$E G G \square S S S P A V W Q D M V Y \square G S E D G K L Y A F D M R R$


TATYEGSSDGTYTATVVDTAANTKAEDGANGESDSVLVDTT
$G C F D A N S G R P L W E K P F S S R S G V A Q D D T V V V G G D D W S V V S A$
$P P G Q C L V N P H N H V D S V V A M R L T D G A V A W A R S E A N L G C N P N$

$\begin{array}{ll}F & Q T G P E G P K A D \\ P & \text { S A G V V }\end{array}$
FSPAMMVTPVAYQGリVY DAAPDRYDTADDAKNGSTLDRNKE
$H D \square W T T S \square K D D V I I L G C \quad R K G H T$

UniRef90 I3ZJR5
UniRef90-K2FTIO
UniRef90_UPI0003B4D704 UniRef90-E0XW05 UniRef90-B3T1F3 UniRef90-UPIO00366A970 UniRef90-F8EB07 UniRef90-H9BX90 UniRef9O-D2QGG2
UniRef90-F0EAF4 UniRef90-FOEAF4 UniRef90_UPIO004295410 UniRef90-I3ZIN0 UniRef90_UPIO003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90_UPI0003B356E7 UniRef90-S2DHE4
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UniRef90_UPI00036A68EA
UniRef90-A2SG67
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UniRef90-A5PD87 UniRef90_W6WNN3 UniRef90_S1RTP2
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UniRef90-G7WQ48 UniRef90-R4W5T4
UniRef90-E6N4G7
UniRef90_E6N4G7
UniRef90_UPI000367A40A UniRef90_UPI00032A507C UniRef90-F6H554 UniRef90-M5WVT7 UniRef90-UPI0002C34ED7 UniRef90-MOZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90-A0A022R5K2 UniRef90-UPIO00375DFE4 UniRef90_UPI00032A7165 UniRef90-A3T3D6 UniRef90_U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPIO003B32839 UniRef90-J2H6S9 UniRef90-W5S519 UniRef90-C0Z464 UniRef90-D8RU75 UniRef90-I3ZJH1
UniRef90-E1RD00 UniRef90_E1RD00
UniRef90_D7CD18 UniRef90_UPI0003B35EB0 UniRef90_S2XQ54 UniRef90-A0Z5N7 UniRef90-F2ZD08 UniRef90_V4XIE3 UniRef90_V4XIE3
UniRef90_L9XN77 UniRef90_C7P4Z2 UniRef90-B21613
UniRef90-E3CY87 UniRef90-V4TEX8 UniRef90-K2DZS6 UniRef90_UPI000380B60C UniRef90_L9WJ47 UniRef90_UPIOOO4664386 UniRef90_C7NTG8 UniRef90-UPIO0028A1DDE UniRef90_C9Z698 UniRef90-M0PL27 UniRef9O-Q01ULO
UniRef9O M0EV56 UniRet90-M0EV56 UniRef90_L9XW62 UniRef90-R8BDI3 UniRef90-H2J3S5 UniRef90-Q663UT0 UniRef90-L8GUL7 UniRef90-B7JC76 UniRef90_C7NRF1 UniRef90-C7NQC9 UniRef90_UPIO00468812F UniRef90-H1L1B2 UniRef90_B4D7Z8 UniRef90_S8DGN1
 VAVDVTSGETRWRFRGVRDDVWGYGLSAQATLLPWRTPEG

 VCVRAETGEQVWHFQMVHHDLWDYDNNVAPILMDITV DG

 LALDARTGKRLWHFQAVHHDI WDRDFPAPPNLDTVTDKGS
 LALDANTGKLLWHFQMVHHDIWDYDNPNTPMLATVK HNG




 $\frac{L V L D A K T G E R V W H Y Q L V H H D L W D R D L P A S P N L I E L G T D N G}{L}$ FPGYDGGGEWGGPAYDPETQI LYYNANEMAWVLNLVEMDS DGGAEWGGAAADPDGVLYLNSNEMAWLVRLAELEM

 LALDVKTGKMLWHFQGVHHDUWDRDFPSPPALVTVK REG VAVNALTGKTVWSYQTVHHD
$V A L D G E T G E P R W R F Q T V Y K D V W D Y D L G S Q A T L V D L P G$
VAIDLETGKYKWHYQYVPHDVWDDDAVSPPDLIDVRDTNG LALDLDTGKDKWFHQLGGYDVWTFACIN
LALDLDSGNDKWYKQLGGYDVWFVASNNPMMLTTHVVNG $V$ A
 LALDDDYGNTKWYRQEGPSGASDWST
LAFDLDSGKI K WYRQLGGGYDVWF LAACSNEAPMMDRDY $\operatorname{L}$ N G





 VVGGSRTGTVHAQDAVTGESVWEFSIDGAVSSSPTVAGG LAALDARSGAVRWKQQVTKSDTWRVLC VAL DLGTGAI RWHFQATEGDAWNVDCVTPPDPDNCPEDAG MCLNKVTGDDLWYKRTEKYDAWTVGCMGDPDDVNCPTVAGG LALDTGTGAVRWTRQMTHPDTWRLLCNQPNTPPEYCPGNA $V A V N M A D G E I$ RWCNRLGGNDVWRLACDTNPPPANCPPEPG VALNLTTGEPVWWQRPSVYDTYNLACHDTPPGPNCPTIQG YA DAVTGEEKWRFAMGGW D D A Y S S PAVVNGVVYA G

VA TGEAKDTLEAGMRDGWTYRTPAT $V A M R L E D G G D V W S Q Q L L A G D A W N M A C F \quad G G G G N C P E E N G$ LHT GAFRWKFQ SHNSWDRDNPSQPSLLELGPEDS


Y ALDAETGAERWVAET $\quad D G M V D A A P A V V D G T V Y V G$ A A L D LK T G QP LDWQSNSVPNGAVIDGPPSKKRLYALTSNSG
 QETVGGRSVAARGNLIVYSDDKH IYCDNANSGGVVWKKHLG Y A L D A ATGTKKWA Y Y A LDA S T G DLLLWK FET $\quad D G A \square K S S P T V V D E M V F V G$ A F D L A T GR ML WH QQATPKDSFVVA C

NTGHARGH TGPTERAGVA WRAD DE GHYYESAPA LA LDATTGRERWRY DGGGKH LDWAVDTWKYATGYVRGTQPT
Y A L D A R T GARKWSHRT

 GAVETRPVVSD GTVYVG

DEAVVQSSP TVA DGTVVVVG
 APTDAGTNQTLPLGSWVTFDASGSTDTNTVSSYVWDFGDG Y DVA T G K ALWRN YFPANYSATPNSNCPAVPGADADFGQAPMLIMAYEVTNDRG $\square$ ALDARTGKLLWQ $\square H \square G G W S A M S S P A R V G S N L Y F G T D$

Y A L E A A T GEREWAF T GGYREVSSVPS SPTVVDGLVIVGG ATVRES $\square G Q T V I Y G K T M Q D E \square V A Y K A Q S Q D P G I D W R Y N V G$ Y ALD DK TGSKI WEFKAENWVKTIS I KD N


UniRef90_13ZJR5
UniRef90 K2FTIO
UniRef90_UPI0003B4D704 UniRef90-E0XW05
UniRef90_B3T1F3 UniRef90-UPIO00366A970 UniRef90-F8EBB07 UniRef90-H9BX90 UniRef90-D2QGG2
UniRef90 F0EAF4 UniRef90-FOEAF4
UniRef90-UPI0004295410 UniRef90-I3ZIN0 UniRef90_UPIO003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90-UPI0003B356E7 UniRef90-S2DHE4
UniRef90_UPI0003F99FFC UniRef90-G2PMM0 UniRef90-W0RHH2 UniRef90_UPI0003763837 UniRef90_UPI00047D039B UniRef90-UPI000365DF6E UniRef90-I2FOS3
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UniRef90-E6N4G77 UniRef90 UPIO00367A40A UniRef90_UPI00032A507C UniRef90-F6H5P4 UniRef90-M5WVT7 UniRef90_UPI0002C34ED7 UniRef90-MOZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90-A0A022R5K2 UniRef90_UPI000375DFE4 UniRef90_UPI00032A7165 UniRef90_A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPI0003B32839 UniRef90-J2H6S9 UniRef90-W5S519 UniRef90_C0Z464 UniRef90-D8RU75 UniRef90_I3ZJH1
UniRef90_E1RD00 UniRef90-D7CD18 UniRef90-UPI0003B35EB0 UniRef90_S2XQ54 UniRef90_AOZ5N7 UniRef90-V4XIE3 UniRef90-V4XIE3 UniRef90-L9XN77 UniRef90_C7P4Z2 UniRef90_B21613
UniRef90-E3CY87 UniRef90-V4TEX8 UniRef90-K2DZS6 UniRef90_UPI000380B60C UniRef90-L9WJ47 UniRef90_UPI0004664386 UniRef90_C7NTG8 UniRef90_UPI00028A1DDE UniRef90_C9Z698 UniRef90-M0PL27 UniRef90-Q01UL0 UniRef90-MOEV56 UniRef90-B8GAJ1 UniRef90_L9XW62
UniRef90_R8BDI3 UniRef90-H2J3S5 UniRef90-MOHEB8 UniRef90-Q63UT0
UniRef90 L8GUL7 UniRef90-B7JC76 UniRef90-C7NRF1 UniRef90-C7NQC9 UniRef90_UPIO00468812F UniRef90-H1L1B2 UniRef90_B4D7Z8 UniRef90_S8DGN1

330
340
350
GRDRYAVATKDGRLLYAGDAKDGSKPWVAPVTNVANAEAP $V V P A L V L P T R Q G D L F V L D R A T G E L V P V T Q Q Q T P A A Y A P D$


 VNRKVV DSATKSNFVYVLDAETGEQV FEPTHDGPPN
 KLVD IV A QTSKTGYLWVFDRVTGKPLWVEERAVPKSPMAG $K K V D A L A Q D T K Y G R I W L M D E E T G K P L S P Y K E V D$

 $R K I D A V T L S T K S G H I L V F D R V T K S L Y P I R E V A V A K S S L P G$ | $K$ | $R$ | $V$ | $D$ | $V$ | $V$ | $V$ | $Q$ | $A$ | $G$ | $K$ | $N$ | $G$ | $F$ | $V$ | $Y$ | $V$ | $L$ | $D$ | $R$ | $T$ | $N$ | $G$ | $K$ | $P$ | $D$ | $W$ | $E$ | $E$ | $R$ | $P$ | $V$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | $K Q V D A V V Q I T K Q G Y I F V F D R T T G K L F P I K E T A F P T D A M E G$ QTI PAVAQVTKS GHVFVFNRDTGEPLFPIE

$R R V D A V A Q I T K T G H V W V L D R D T G A L F P V E E R A M P T A T L P G$ ETUE AVA Q IT K S GHVFLVFHRETGKPDF PIE ERP AKDKELTNNMA GA ILLYSNNCMACHGPEKLGGGDVPTLV G EMLT A TK QRSSGRQLYVANCEACH GAERTGNPAGGYPS



$G T P A D I L P S K Q G E \square Y \| L D R R T G R L H T M \square E R A V P Q S G V E P$ $K M \square P G V I H G G G K T G H I Y V H D R A T G R L I R F S Q A M M P Q$
$P S N P S C P P G$
$T K K D V V V A Q K S G F A W A L D R D N G T L L W F T E A G P G G L A G G G$ $R S Q K V V Y G A G K M G K V Y A F D R T S G E L L W S A V V G R Y D E A A Q L$
 S QNY S NPAT DRS DAL DALLDALT GQQRRWA DQLTTPNDR WLVGG $T M L D V V V A V Q K S G F A W A L D R Y D G S L V W S T E A G P G G L T G G G$
 TSRDVVVAVQKS GFAWALDRDNGNLTWFKLA GPGSNE GGG FSDETLFVGSFDHSCYALDALTGEKLWSYGTRMPMIDTSPS S LD H F C Y A L D A L T GE K L WS Y A T N GP I D T S P D ADFGEAPMMLTVVFANATKVDUVAIVQKSGFAWA $Y C P G L K D G T A D L D Y D V G A T P N D F R V N G R T M V G I G Q K N G V Y H$ SKRDIVVAVAKKSGFVWALDRDNGSLVWSVE
$T L Y D V V A V A T K A G N L I V L D R D S G R P V Y D W R L R A P T S \| V P G$ $T V F V G T S G S G V Y A L D A G T G E Q E W Q F Q T D R R V D A S P T$

PDYDFGA
 DGTALDYDLGAHPNLGT VDGRPLVG $P D Y D F$ LD Y D F GGGGGPNLFNNVVGAGQKS GVFNMFDAAKGKY DWSVV NSYESVYDTTGDRS LYAIDAATGKEKWRFVMEGIVDRSPV SY DAVYALDAATGDKKWEFRPDRKSFRSPT $P D Y D F G G G V T F T Q$
$M V Y T R D E N G T D Q N A D H A V D L E T G L K K W A V K A D A Q V Q A S P A$ $P D L D D G A A$ W $R \quad Q P A V V L P T K V G N I F V L N R L T G I P D V P V D R V G T G G G V A G$ S L D GNL Y AV DTAT GK Q QWN FVVTGSFVVSSPT

 RFR NHDGKLVALDA QKGTLLWRAVVGGP DS GSPA VVAVKSGFAWAFDRDSGD』1/WFKLAGPGGREGGG $V V N D T L Y V G S A D G N D Y A L S A S S G A R K W A L K T G K P V L S T P A$

 VVDGTVYVGSAD GQMYALDAADGSQEWTFQTELDDYSSPT $V A D G T V Y L A S G R E E L W A V D A A T G R R R W K Q Q L R P R Q P R S Y N$


 $S$ NXGTERWGFDTDEAVQS SPT
K $\square$ K WN F K T LG WS Y DKYF Y A LTT T N GNLLK WK F LA N SE I I A S P T TAS GAVY NHTYRAVGTYTATVTVTDQSGNTDTDTVVVTV DYKGFVHF LSRDDGTFVARMKT
RTRRLVTAGQKNGMMVALNPATGALAWARKAGPAGLNGGA
NLF T RHNDFYDI DWRTHKIRWSRNFAHAVNLAEA
VYVGSSD H Y V Y A L D A E T G E QL W S R DVGGRVT GSVT TAAKT DAEYTY LGGVYGVNAATGEREWAF
F GYEHVPSMTKNGVIVAMDPKQQSTVWAHK DD

$S Q V D M V V A V Q K S G Y A Y A L N R N N G A V V W S T L A G P G S A Q G G G$

UniRe990 I3ZJR5
UniRef90_K2FTIO
UniRef90_UPI0003B4D704 UniRef90_E0XW05 UniRef90-B3T1F3 UniRef90_UPI000366A970 UniRef90_F8EB07 UniRef90_H9BX90 UniRef90_D2QGG2
UniRef90 F0EAF4 UniRef90-UPI0004295410 UniRef90 I3ZIN0 UniRef90_UPI0003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90-UPI0003B356E7 UniRef90_S2DHE4 UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90-W0RHH2 UniRef90_UPI0003763837 UniRef90_UPI00047D039B UniRef90 UPI000365DF6E UniRef90_I2F0S3
UniRef90-UPIO0036A68EA UniRef90 A2SG67 UniRef90_UPI00036C8823 UniRef90_N8WU45 UniRef90-A5PD87 UniRef90-W6WNN3 UniRef90_S1RTP2 UniRef90_G7KZV4 UniRef90_G7WQ48 UniRef90_R4W5T4 UniRef90_E6N4G7 UniRef90_UPI000367A40A UniRef90 UPI00032A507C UniRef90_F6H5P4 UniRef90_M5WVT7 UniRef90_UPI0002C34ED7 UniRef90_MOZJV4 UniRef90_D6U7D9 UniRef90_D6U242 UniRef90 A0A022R5K2 UniRef90_UPI000375DFE4 UniRef90_UPI00032A7165 UniRef90_A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPI0003B32839 UniRef90 J2H6S9 UniRef90_W5S519 UniRef90_C0Z464 UniRef90-D8RU75 UniRef90_I3ZJH1 UniRef90_E1RD00 UniRef90_D7CD18 UniRef90_UPI0003B35EB0 UniRef90_S2XQ54 UniRef90_A0Z5N7 UniRef90 V4XIE3 UniRef90_V4XIE3 UniRef90_L9XN77 UniRef90-C7P4Z2 UniRef90_B2I613
UniRef90_E3CY87 UniRef90 ${ }^{-}$V4TEX8 UniRef90-K2DZS6 UniRef90_UPI000380B60C UniRef90_L9WJ47 UniRef90_UPI0004664386 UniRef90_C7NTG8 UniRef90_UPI00028A1DDE UniRef90_C9Z698 UniRef90 M0PL27 UniRef90_Q01UL0 UniRef90_M0EV56 UniRef90_B8GAJ1 UniRef90_L9XW62 UniRef90_R8BDI3 UniRef90_H2J3S5
UniRef90 M0HEB8 UniRef90_Q63UT0 UniRef90_L8GUL7 UniRef90-B7JC76 UniRef90 C7NRF1 UniRef90-C7NQC9 UniRef90_UPI000468812F UniRef90_H1L1B2 UniRef90_B4D7Z8 UniRef90_S8DGN1

LK D A P V H F GVLPA SQPVSEGLPGPP DDQLWCR $V Q F R R L V Y W L Q Y P G D M$ ETAAK TQPHP
E ETFPTQPDPWAYRPDSSAGKTTLLFPGLTGGPNWGGAAF E WIS P T QPFPTKPAPFDVDRKGTLQLPGSVGGAEWGGAGF EKAWETQPPFP EKPWPTQP F N T $\square$ N Q NPENEPD L R A S QRRY L G D $\square$ F CPS Q LG G VF S GPA F E E A WP T Q P EFPWPTQP
EVTSPTQP
EWYSP TQPFPTPE $\square R$ ARARE $\square$ AR QYRWGP LYYTPPS LAGAA E A SWPTQPQPQ
E E S WP T QPFPTH
E E A WPTQP T S
EKPSKTQPBP
D R A A P T Q

 TFPSLI GLKDRKPEKEMLKKKDQNGAGAMPGFKGVLTPA E E E Y P S P T Q P
 ELTSRTQP $\square P \square A P P P F A R Q C L T A N M I T T R T E A A H A W A V$
AERTAT QPYRDMWGMTP $\quad$ TDQM $\square C R \square Q Y R Q S A Y D G Y Y T P P T$ ENMWT LPTAE GARMLPGANGGDEWSPMAF PNRDADFGEAPMMLSTVVNRTKRDLVVAAQKSGFA WA LAER TF GAAT DEKRDYTNDANSDAK DFKLLDSNMNT TS G GWVAM $D V L P E G T T R \square Y P G V$ LIGGVETPMAY
 I K P S K Y SKF LDN PLNPQDMNWRWQGEWTDDANY LRAR GKFY $L P S D A T A N C P T P R V D N Y D F D F G A S P N L D L A Y H N G Q L R T L V$ ADF GEAPMMLTTCVNGTKKDMVVAVQKSGYAWALLNRDT TWGAATD GKRVYTNVVNSSGQNETLKPS DADTTAGGWVAM MWGAATDKKMVYTNI ANSDNKNFTLKPSTNITTWGGGWVAM


 $L N R N N G N L V W S T E A G P G G T Q G G G T W G A A T D N R K V Y T N 1$
$V F D A K T G E V V W R R Q L S E P G H G$ G A GPS GL GGGGTWWGAATDEQN $\square Y$ TN $\square V N T F A K N F T L I P$ ERTAAYQPDP
VDGNTVF VGDRDGTVSALAAVSGGQLWAFSTLGTVESSPT $V$ Y H A F DA HT GEVVA WRR QL S EPMP GGGGLT G DQW G
VA G GTVF VGCND GSVY A L EA LT GE L Q W W YET G S WVR S S P
IG P G G T L
$\square G Q K S G V Y H V L D A R T G E \square V W Q R R \square S V P R P G D M G L S G \square Q W G$ ESPMLLLTIPSRFSKNKFQDILVTGQKS GIVWAHDRDDGSG



 ERFAATQPVSRRLNFI PPALLTEKSMWGVTP FDQMACRIT YN $V V D G T V F V G S L D N N L Y A V D T T T G K Q Q W A F E T G$

 VVD GTVVYASCGTGVLAA LDADS GERLDRYPTGGPAMSTPA

 I
$V V G G A V Y V G S A D K N V Y A L D A A T G A K K W A Y T T G$
IVDGTVVVGGSDDNHVYAVNVQTGEQEWRFETGDRVRSAPTVV
 RFSSSPAVAD GRVVYVSFPYDREDTGGSRLWEVSTDSSPYASP LS GDTLYVGSRDETLYALDAATGAEKWSVAS GDWQGSA
$V R N G T L F V G S D D R M V Y A L D A Q T G E K K W V F$

SAC $\square$ H GS S VY $\square$ G G D D G NVVC LDD $\square R T$ GA VK WK QRTQQPVRS VADGTVFVGSNDATLYAVDAETGTERWGFDTEEAVQSSPT
 EQSNAMFHGSLSNLGYYPNETGPTSAPDEAWNDTDGTPMV
QWGADGQR VVA $\square T N S N F A E V Q G \square V S G G S T Y G G \square W T A D D$ SPVGRGNAVFTAFMRKDSYDLWDGLVHLWKHTAMDDFAFE VTEQTVLVGSTGSY LYALDKETGEPRWSRSNRGHVTSAAD

UniRef90 I3ZJR5 UniRef90 K2FTIO UniRef90_UPIO003B4D704 UniRef90_E0XW05 UniRef90 B3T1F3 UniRef90-UPIOOO366A970 UniRef90-F8EB07 UniRef90 H9BX90 UniRef90-D2QGG2 UniRef90-FOEAF4 UniRef90-UPIOOO4295410 UniRef90 I3ZINO UniRef90_UPIO003746E26 UniRef90_UPIO0047BC7C2 UniRef90_UPIO003800284 UniRef90-UPI0003B356E7 UniRef90-S2DHE4 UniRef90_UPI0003F99FFC UniRef90 G2PMMO UniRef90 ${ }^{-}$WORHH2 UniRef90-UPI0003763837 UniRef90-UPIO0047D039B UniRef90 UPIO00365DF6E UniRef90-I2FOS3
UniRef90_UPI00036A68EA UniRef90 A2SG67 UniRef90- UPI00036C8823 UniRef90_N8WU45 UniRef90-A5PD87 UniRef90 W6WNN3 UniRef90-S1RTP2 UniRef90-G7KZV4 UniRef90 G7WQ48 UniRef90-R4W5T4 UniRef90-E6N4G7 UniRef90_UPI000367A40A UniRef90 UPIO0032A507C UniRef90-F6H5P4 UniRef90-M5WVT7 UniRef90 UPI0002C34ED7 UniRef90 M0ZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90 A0A022R5K2 UniRef90-UPI000375DFE4 UniRef90-UPIO0032A7165 UniRef90-A3T3D6 UniRef90 U1QT89 UniRef90_UPI000376BCC9 UniRef90_UPI0003B32839 UniRef90 J2H6S9 UniRef90-W5S519 UniRef90-C0Z464 UniRef90 D8RU75 UniRef90 - I3ZJH1 UniRef90-E1RD00 UniRef90-D7CD18 UniRef90 UPIO003B35EB0 UniRef90 S2XQ54 UniRef90-AOZ5N7 UniRef90 ${ }^{-}$V4XIE3 UniRef90-V4XIE3 UniRef90-L9XN77 UniRef90 C7P4Z2 UniRef90- B21613
UniRef90-E3CY87 UniRef90-V4TEX8 UniRef90 K2DZS UniRef90_UPIO00380B60C UniRef90-L9WJ47 UniRef90_UPI0004664386 UniRef90 C7NTG8 UniRef90-UPIO0028A1DDE UniRef90_C9Z698 UniRef90 MOPL27 UniRef90-Q01ULO UniRef90-MOEV56 UniRef90-B8GAJ1 UniRef90 L9XW62 UniRef90-R8BDI3 UniRef90-H2J335 UniRet90 MOHEB8 UniRet90-Q63UTO UniRef90-L8GUL7 UniRef90 B7JC76 UniRef90 C7NRF1 UniRef90-C7NQC9 UniRef90-UPI000468812F UniRef90 H1L1B2 UniRef90-B4D7Z8
UniRef90_S8DGN1

440 GG $\square \mathrm{DWGGVSFDPERELLVFNYNQVPMVGE} \mathrm{\square RDGVPYRTPW}$ DPNSGYTFVFSQDLGTFGWMEDAENGSEFPYVRGNFDVRD DPETGMLYVPSVTGTFAADLTPGNPDRMNVRYTRGTRAFP

## GYNTDFVPSQNTCGTVIEERLQYK GKVIDG

RMHYVGDFTPDSTRKS पMYPGYYGGПNWGGGAVDEASGLL

DGTRGTपs पPASTGGANWEGGADDPETGYMNYपAGGRGGQ

DLKDRQDEPFTGNDKSVNKNYKTKRPA YSFTGYNKFL LNRPATTNEPGQAAKEPGQSQHDTKQTTVPYRVAGFTKFL NA乌IAFDYEKQNTGDETPQATKTGANPERFMNTSAYQTWS

LARYNYG
P $\square Y$ FPPTLDKAGT LEVPGVLGGAS WVGAAH
SDRRWTQYYNDMPNHNRLVPRAVANEKGWFADDVNAGWRL DPKTRLAYAANLHQPMTYQVTDAPYPGGSKLWLGGA
DNGNIIWYTEAGPGGLVGGG\|WGAATDEKRVYUANSDGKN DASNGTILWST ANPS SDGVLYVPVV NLLFTDWTPTS VADGTVFVGSDDGNLYALDADTGDEQWTFETGDVIGSDPT QNPPAYDPVRNRLFVAVYNSPSAFSLANVGPGTGWPNGWG GAGQKSGПYHALDAATGEDIWQTQLSDGGTSGTGGПQWGS GNLLWFMEVGPGGTVGGGTWGASTDEKKTYTNIANSEAKN DANTGETLWSTANPSNATSNGPVTMANGVLEAGSTHPTGP APGNGKII WSTANPSNATSSGPVSVANGVLFAGSTN DVDTGKILWTTANPSNDTTQGPVSVANGVVFAGSMASNGP KKAGPGGAEGGGDWGAATDGRRVYTND ANGNRDP NGMVYGGSTDHNVYALKGEAGEVQWSIETGEETFSSPLAN ANTNKQN SSYDGEKDYVASYYGNPGTLEADDPANGD DKWQTPSPANG SNKПANNGGWVADEARNGKIILWSISNPSNTTLISGPVSVA
VADEAVFVGDNSGRVYADE\|VSGRRWTVETGGSVESSPT SSYDGRWLYAATYFANPGKVFALNPANGDVRWQTPNPANG VDAATGK■AWHRQVGRGGMAGGПHFGПAADSGRVYVAПSA GGFMWGSAYEARNPVNGILYSTISNSQKK AAYDGRRDYVATNRAEPGTLFALDPASGELLWESPNPADG

VWETTAGPGGSVGGATWGAATDNHRVYTNDANSDRAT STNWGFWSALDMKTGK LLWQTPEPTHGASADSSMSTANGV VANGVVYVGNEDKNVYAUDADTGKEKWRFATDDRVVSSPA DREFDSS
TVSNGRVYAPAADPEFPMDPAEYNPQPGDYVLDLDTGDLL DGLLYQAYSTGSGGADMADDAKTGEQDWNAPLAGGWSTPV DTHFPGLPNDPAFP K LRYDGNPWTP

## NSVVSSPT

NSVVSSPT
GTTTEQE TEPFGNVYADDADDGTEKWSDETDDVVRSSPT VSDGVLYAGTNDGRVVALDADTGTERWTFDAGGNGRSAPA NGT LLWSTD DTPGSTNR\|VASSFNPYKSQ $\square Y V I S N A N N A Q$
DANSGEDMWSTADPSNETAHGPVTVVNGVLFAGSVSANGP
G VWQ P PA
VDGTVFFGSDDSNVYAVDAETGDDEWSFETGGAVHASSPT DGKDLWQTRDGKGGALGGTEWGSAADQDRDYVANSDVRFL ADGTLF GSKYRLLYAlDAASGVEQWAYGTGTRAGPSGSP


ETESKTGSSSPT
P LLDGRS $\square$ TWGAWSA $\square D V A T G K \square L W Q T A D P F E A \| D M G A V S$
SPTYSDVFVGSGDQNGYALDAEGGWPAWRFRTGHYDNSSP VADGTVFVGSNDATLYAVDAETGAEQWHFETGDRVQSSPT
LVKNGKПY TGTSNG\|LYA DDKNGE IWWTFKTGDY DASMPS MQPT IVGDTLYFAFHDGGKLYAVDPTTGEEKWNATWTTPA
PADGSVWQTAVPEGQAANSSVAAARGATAYSAVTAANGV VVSDDAATGRLIHRKNDYTRYLSPRAWПHER\|ISSEDYW PLLDGRDYFAERAVFNNYY
 sis

UniRef90 I3ZJR5 UniRef90 ${ }^{-}$K2FTIO UniRef90_UPIO003B4D704 UniRef90_E0XW05 UniRef90 B3T1F3 UniRef90-UPI000366A970 UniRef90-F8EB07 UniRef90 H9BX90 UniRef90-D2QGG2 UniRef90-FOEAF4 UniRef90-UPIOOO4295410 UniRef90 I3ZIN0 UniRef90-UPIO003746E26 UniRef90_UPI00047BC7C2 UniRef90_UPI0003800284 UniRef90- UPI0003B356E7 UniRef90-S2DHE4 UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90 ${ }^{-}$WORHH2 UniRef90-UPI0003763837 UniRef90-UPI00047D039B UniRef90 UPI000365DF6E UniRef90-I2F0S3
UniRef90-UPI00036A68EA UniRef90 A2SG67 UniRef90_UPI00036C8823 UniRef90-N8WU45 UniRef90-A5PD87 UniRef90 W6WNN3 UniRef90-S1RTP2 UniRef90-G7KZV4 UniRef90-G7WQ48 UniRef90-R4W5T4 UniRef90-E6N4G7 UniRef90_UPI000367A40A UniRef90 UPI00032A507C UniRef90-F6H5P4 UniRef90-M5WVT7 UniRef90 UPI0002C34ED7 UniRef90-M0ZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90 A0A022R5K2 UniRef90_UPI000375DFE4 UniRef90_UPI00032A7165 UniRef90_A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90-UPI0003B32839 UniRef90 J2H6S9 UniRef90-W5S519 UniRef90-C0Z464 UniRef90-D8RU75 UniRef90_I3ZJH1 UniRef90-E1RD00 UniRef90-D7CD18 UniRef90_UPI0003B35EB0 UniRef90_S2XQ54 UniRef90_AOZ5N7 UniRef90 V4XIE3 UniRef90-V4XIE3 UniRef90-L9XN77 UniRef90 C7P4Z2 UniRef90-B21613 UniRef90-E3CY87 UniRef90-V4TEX8 UniRef90 K2DZS6 UniRef90_UPIO00380B60C UniRef90_L9WJ47 UniRef90-UPIO004664386 UniRef90_C7NTG8 UniRef90_UPI00028A1DDE UniRef90_C9Z698 UniRef90 M0PL27 UniRef90_Q01UL0 UniRef90-M0EV56 UniRef90-B8GAJ1 UniRef90-L9XW62 UniRef90_R8BDI3 UniRef90-H2J3S5 UniRef90_M0HEB8 UniRef90_Q63UT0 UniRef90_L8GUL7 UniRef90-B7JC76 UniRef90 C7NRF1 UniRef90-C7NQC9 UniRef90-UPIOO0468812F UniRef90-H1L1B2 UniRef90-B4D7Z8 UniRef90_S8DGN1

D PVVEAKGRIITAVNAETGRVMWQSATASPVIAAVT GEVDRLCLRPPHGGIMAVSTQAPALHWDRPTGTPNQGGVL $G D \square R L P C Q K P P W G K L T A D D S V S G D V V W R Q H T G R P G R A A A L$ $G P Q G L P L L K P P Y G R I T A I D M N T G E H V W M V P N G D G P R D H P A$

FRYLLVQDSPGNGS $\square$ TA $\square$ DASNGE $\square$ KWE $L S \square$ PNR $\square$ QSAS $L$ LVND $\square R \square A H$ WA QFAGYNPTGASGNYAEQRGAPYGVIHGMF
$\square A P G V P F V K P P W G R \square T A \square D \square T T G N H A W M V P N G G R A S R A G L$

TKEGYPA TSPPWGTLNATNMKTGEYEWK DPTGRENYGGPV DSNGLPAIRPPWGTLNAI DLNTGMYRWKHGTGAESYGGPV DPSGNPAMKGPWATLSALNLSTGEYEWQ $\square P \square G N D E R S G P M$
NPKSNVLYVPSFT $\square$ PF G $\square K \square K K G T T G \square Y D Y T G T W A G V G G P$
GLTGLLCKEPPYGGTRADDMNSGKTDWPFT\GTPNNGGGV FKVIASEEQWGKLSAVNVDTGKVAWDSKTAQPLIGGVL FThKPSTKDTTAGGWVAMDAKNGQILWSTADPSNGTASGP NEVVFVGSTDRLGHIYADNGRNGHILWWYETGASVYGGMM

 FNLAPSNMSTTFGGWVAMDAKNGGII WS INANSNSSSGPV MYAMEATSGRILWSHNTGASVYGGA PEGS 1 YAMNTKTGKILWSNETGATVYGG M FTLAPSTQTTTAGGWVAMNANTGQILWTTANPSNETSGPV
 FTLLPSNNVTNGGGWVSMDAGTGRLLWSTAVPHNATTNPVV CSWGGAAAHPD@CTFA
NGVLFVASPTSDGTTYADNTKNGQ LLWSYETGDGVYGG\|S
VA G GAVYVGS DDGLVYALDTVTGEAVWT FETDDAVQSSP
 VA GGTVFVGS DDGSVYALEAPTGELQWRYE DGSWVFS S P NDDGVR
 FHLVPSGESTTAGGWVAMDAATGRTEWSTANPHGARAGPV VYVG SLDAAGYMYALSSATGQVLWSFPSGGSVFGAPA
 $\| V D G V V Y A G S W D N N D Y A L D A L T G K E K W R F T T G D R V V S S P V$
$G Y N Y V E S G S S D G E V F A L D A A T G D K K W E F P T G D L I R S S P T$
$V$ W SVSAERGCEI TYAERNEQTEPWPDCSFSYGYSATP LLHALDPLTGELRWYAPALDECPEN RKPACDPGLSAAA
VADNTVFVGSNDTNLYAVDAASGKQQWAFKTRD KVQSPP VADNTVFVGSNDTNLYAVDAASGKQQWAFKTRD KVQSPP AFDGTVYIGGRDSNLYALDAADGTEQWTFRAGETIESSP $\square C G D T V Y A G S \square D G Y V L A D D A D S G T E R W R Y D T A G Q I N G A P V$ I HNG V SGGK
 PL WKV 1 L LWSYNTHM S I V V Y

VVGGVVYVPSNDKNVYADDAATGAKKWAYSDGAST SSVP $V M D R T V F I G S S D N T V Y A L N K R T G D Q E W A F E T G G V V H S S P T$ TDGTRRLNSKEGGGLFALDLDAGKDTMQVAQCSPALSAAV AVRNGTVYVASDYRLYAI NAEDGTRRWEFEPEGGIHASSP VADGVVYMGSSGWYLWAVDAATGEERWKQEVG PALRASA AVVGDTVYASGEGELMALHATTGRRKWRSTSVGYGTPYAP AMNGWVFVGNERGAVYALDTQTGEQKWKFDTDSRVASSPT VANGVVYAPSMSGNMHALDAATGKVLFTFASGGSVLDGPA
$F V V G T R V F V G G D G N L Y A L D T K N G R L V W K Y E V G S Q T T S S P R$ VVDGTVFVGSNDTNLYAVNAETGTKQWRFEADDWIDSSP
YYDGNTIFGSSDSYVYSTN EKGELNWKFRTSGAVKSSPS YANGVLFLGSNDYKLHAINATDGSELWNYSTQTNVRSAPA
F $L V G S S T K S L G A S N Y F A D Q A D T G R \square L W D Y A P G G S A V S G P S$
$K N W A D A A L R K M G H A \square H L P A L D S S M R R H D P T H P G \square Y D P P D T$

UniRef90 I3ZJR5 UniRef90 K2FTIO UniRef90_UPI0003B4D704 UniRef90_E0XW05 UniRef90 B3T1F3 UniRef90_UPI000366A970 UniRef90-F8EB07 UniRef90 H9BX90 UniRef90_D2QGG2 UniRef90-FOEAF4 UniRef90-UPIO004295410 UniRef90 I3ZIN0 UniRef90-UPIO003746E26 UniRef90_UPI00047BC7C2 UniRef90-UPI0003800284 UniRef90- UPI0003B356E7 UniRef90-S2DHE4 UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90 ${ }^{-}$W0RHH2 UniRef90-UPI0003763837 UniRef90_UPI00047D039B UniRef90 UPI000365DF6E UniRef90-I2FOS3
UniRef90-UPI00036A68EA UniRef90 A2SG67 UniRef90_UPI00036C8823 UniRef90_N8WU45 UniRef90_A5PD87 UniRef90 W6WNN3 UniRef90-S1RTP2 UniRef90-G7KZV4 UniRef90 G7WQ48 UniRef90-R4W5T4 UniRef90-E6N4G7 UniRef90_UPI000367A40A UniRef90 UPI00032A507C UniRef90-F6H5P4 UniRef90-M5WVT7 UniRef90-UPI0002C34ED7 UniRef90 MOZJV4 UniRef90-D6U7D9 UniRef90-D6U242 UniRef90 A0A022R5K2 UniRef90_UPI000375DFE4 UniRef90_UPI00032A7165 UniRef90-A3T3D6 UniRef90-U1QT89 UniRef90_UPI000376BCC9 UniRef90-UPI0003B32839 UniRef90 J2H6S9 UniRef90_W5S519 UniRef90-C0Z464 UniRef90_D8RU75 UniRef90-13ZJH1 UniRef90-E1RD00 UniRef90_D7CD18 UniRef90 UPI0003B35EB0 UniRef90-S2XQ54 UniRef90-A0Z5N7 UniRef90 F2ZD08 UniRef90 V4XIE3 UniRef90-V4XIE3 UniRef90-L9XN77 UniRef90 C7P4Z2 UniRef90- B2I613 UniRef90_E3CY87 UniRef90_V4TEX8 UniRef90 K2DZS UniRef90-UPIO00380B60C UniRef90-L9WJ47 UniRef90_UPI0004664386 UniRef90 C7NTG8 UniRef90_UPIO0028A1DDE UniRef90_C9Z698 UniRef90 M0PL27 UniRef90_-Q01UL0 UniRef90-M0EV56 UniRef90-B8GAJ1 UniRef90 L9XW62 UniRef90_R8BDI3 UniRef90_H2J3S5 UniRef90 M0HEB8 UniRef90_Q63UT0 UniRef90_L8GUL7 UniRef90_B7JC76 UniRef90 C7NRF1 UniRef90-C7NQC9 UniRef90_UPIOOO468812F UniRef90 H1L1B2 UniRef90-B4D7Z8 UniRef90 S8DGN1
 LTAGGLAFVATTDNLIRALDTETGEELWRARLPAGGQATP
VTAGEVLF TAA TDDNLRALATATGEEDWVVKLPRRGNANP IIAHLDLPPLGQPGRKFRAFDKASGEVIWEMTLPAGNTGSP
$\square \mathrm{V}$ S GNVVYA $\square \mathrm{DRAGVFYA} \mathrm{\square DTDDGT} \mathrm{\square LRDMPLNADGSAGP}$ TSP $\square G V P C \square A P P Y G T \square T A \square D L N S G Q \square A W Q V P M G S$
$\overline{L V T R T L L F A G E G T N N F W V L D K R T G A R \square T R \square D \square P S G T Q T G P}$

VTAGGLLF TASADGKFRADNKRTGE\|LLETEDPAPGVATP VTASGLLFI GTKDKQDRAFDKRTGRLLWQHELPAAGFATP $V \mathrm{~V}$ A GGLLVFIGAADKKLWAFDKKTGKIVWETALPGVNNANV

$$
\text { D G } \square \text { P } \square \text { F K P P F S T VTA } \square \mathrm{DMNTGKH} \square \mathrm{WR} \square \mathrm{PA} \text { GRGPVDHP }
$$

VTAGGLLF $\quad$ IATTDNL TRA $\square \mathrm{DVETGETVWSDVLPGGGQANV}$ $V T G G G L V F N G E G N G L F R A F D A A T G K K L W E F Q C G A G V N A P A$ $V T V A N G V L F G C S H G P \square Y A M N S Y T G K \square L W S Y N T G A T L Y G G$ SISNGCVYVGHG
TV DNDLVVAAEYDGTDHAFRAETGEEVWEMRAPAG AVADGTVFVGSKDHNLYAVDAQTGDELWAFETGDSIESSP TTTNGLVFTTFNDGTIRVFDADTGAELRRDMDAGPVMTQP SSDPGLVFQGSDDGKLRAFNSRTGADVWEYDTRRSFVGT SVANEVVFAGSTNGNVYA $\square N A R N G G I L W S Y E T G A S V Y G G M$ $S V S S G C 1$ YVG
S $ا$ SNGCI YVGNGYKRTY $\square$
ASYGCIYLTGYTVGLAKFHPTWTG
$T I V N G V L F A G S P N G P L Y A M D A S D G K \square L W T F N T G A T D Y G G$
 T DAN GVLVAG $T$ TSPGVVYEGANDGKFRAYSAQTGQVLWEYDT
$\square S D G C I V F$
$T V A D G T V F V G S D D G N D Y A L S A G T G E Q E W Q F E T D G S V T S S P$ TTSPGLLYEGSNDGTMRDYSSHTGEVLWEYDT AVA GGTVFVECNDGSVY
TVTPDFVLAGGDDGFVRIHDAATGEVLWQFDTRGGAMSGG SVTNGVVFGGSMTGKVYALDGETGKILWSFQSGATVNAGI
 1 VDGTLYW



$T V V D G T V F V G S D D G N D Y A!D$
$T V V D G T V F V G S D D G N L Y A I D$
TVADGLVFVGSYDGNIYAVDTDDGSEEWVFETDGNTRSSP A ADDTLLVGSWDECLYALDAATGDERWHYRTGSLI DGSP
 SASYGCIYLGNG

VVA G GVVY $\operatorname{VGSGDKNVALDAVPG}$
$V V R E T V F V G S G D N N V Y A L D A K T G A Q E W T F E T G N V V K S S P$ TVVD GVVFSGGVSGFLRAYATDDARLLDEDDTHGGAMDGP AVADGIVY $\operatorname{l}$ GGDRGAVYAIDADDGTEQWTFRTGRWIWSSP $A V A E G V V Y Y G S E D R S L W A V D A D V G E E R W R L P T G G E V A S T P$
$V V S K G V V Y V$
$V$ $\begin{array}{ll}V V S K G V V Y V V S G D & H V Y A V D A G T G D T K W N A T T T A M A G S A P \\ G V & G E T V F V G S D N S N G Y A L D A R T G H E Q W R Y E T D G D V R S S P\end{array}$

VE GGRLYFGAVDQAVYCLDAGNGQLIWKY LTDGP\|VSTP TVADDTVFFGTLEGNLYAVNAESGAGQWRFRPGSGLFDAS
DDNEGNDY DGSDDNY LYK L TKDG LVVFKKTNSS DQTK $V \mathrm{~V}$ D GVVYFGSNDGNMTALNASTGEELWYHTLSQPVLVES
$V$ V G GSVYWGCG YA R DGRGCKTFYA FSVPS C
A WHR I I YVEPRGTKRLYALDAHTER LLWTFRTGADVSNPN


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UniRef90-K2FTIO
UniRef90-UPI0003B4D704
UniRef90 E0XW05
UniRef90 B3T1F3
UniRef90-UPI000366A970
UniRef90-F8EB07
UniRef90_H9BX90
UniRef90 D2QGG2
UniRef90_F0EAF4
UniRef90-UPI0004295410
UniRef90 I3ZINO
UniRef90-UPIO003746E26
UniRef90_UPI00047BC7C2
UniRef90 UPI0003800284
UniRef90-UPI0003B356E7
UniRef90-S2DHE4
UniRef90_UPI0003F99FFC UniRef90 G2PMM0 UniRef90-W0RHH2
UniRef90-UPI0003763837
UniRef90 UPI00047D039B
UniRef90 UPI000365DF6E
UniRef90-I2F0S3
UniRef90-UPI00036A68EA
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UniRef90-UPI00036C8823
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UniRef90 A5PD87
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UniRef90_E6N4G7
UniRef90 UPI000367A40A
UniRef90 UPI00032A507C
UniRef90- F6H5P4
UniRef90-M5WVT7
UniRef90 UPI0002C34ED7
UniRef90 ${ }^{-}$MOZJV4
UniRef90-D6U7D9
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UniRef90-W5S519
UniRef90-C0Z464
UniRef90 D8RU75
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UniRef90 UPI0003B35EB0
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UniRef90-A0Z5N7
UniRef90- F2ZD08
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UniRef90-V4XIE3
UniRef90-L9XN77
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UniRef90-B21613
UniRef90-E3CY87
UniRef90 V4TEX8
UniRef90 K2DZS6
UniRef90-UPI000380B60C
UniRef90-L9WJ47
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UniRef90-B4D7Z8
UniRef90_S8DGN1

T G G N S T G D TETGG
GYYQSASTGMAGNVLLAFGLP

G G GVHSSPTVEQGLLYVGSRDYKLYALDTRTGTKR GGGVHSSPTVDQDLLYVGSRDHTLYALDAKTGTKR

GSTTSGTATAQPGQ
VQS GYS GFSQMPGALLAFRLT GK DGG IISSAAVSGETIF IGSNDGNLYADDR $\square$ TGQ

NHAEWVDRAVPG

GRTVNTAPAVADDTVYVYALDGTD

ALAGL

PDSDWSQFQKDSSNTGYGFSSAPTRDP
VAARAATEPSWPTFQFDNGRSGYNPHG RRPTGKL DRPGHDWSSF LG PHGTGVSDETGLLDEWPDDG DAPLQNWSQPGANPAHH
 ATHPDDDVTMFRRGLRRLGYYPDETVPDAVS

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| :---: | :---: |
| Un | DS RAVSAPAVVGDGSTYVGSA D G NVVYSV\|DA |
| UniRef90_UPIO004198A76 | KQRWVYASEAN I S S P Al TQQLVIVGNS L GTIEADD |
| UniRef90-Q8TI65 | EVLWQNLTSSGSGGINAPPVVSGNTVFVTAGNASVWAFD |
| UniRef90_M0CY33 |  |
| UniRef90-D4GR74 | T K VWE T T DGSFSSSPAVVGELLYHGTAA NGLFAYDV |
| UniRef90_C5CFE7 |  |
| UniRef90-UPI00029A6 | PPVWQKR\GKGYS SPSVLGNRLVIHHRQRDRLIECVQ |
| UniRef90-Q0BPR0 |  |
| UniRef90_UPI0003639A1D |  |
| UniRef90-A8IPY9 |  |
| UniRef90-L0JY27 | NWSFP $\square$ NNHTAAKSSPL P P P GETVVDA |
| UniRef90-B0D207 | VS GS WDK T $\quad$ RVWDA |
| UniRef90-UPI0002374EF |  |
| UniRef90-F2UHP8 | NVVWSRTMGTGNGMRDSUVVDGLLHVGT DNNTFAALD |
| UniRef90-M0E127 | PEVNTGDHSAAKASAVPTPDGGVVLPGDTGELLAITA |
| UniRef90-D8RU77 | REKWSFDAGADISA TPAIYDCVVYFPS WNGLVFAV |
| UniRef90-M5U8Y0 | NLLWKRD DLGARSTPVVMDGRLYT $\mathrm{L}^{\text {L R A D R GTVVCLD }}$ |
| UniRef90_U1P01 |  |
| UniRef90-V6EWV3 | VWRS S $\square$ GEGSSKRAQP |
| UniRef90-B0E4G5 | PDK L F L VR |
| UniRef90-A0B7J1 |  |
| UniRef90_M9SLC66 | DLVWHWR DSPSTFESIT YGDGRVYVSTTDF KTYALDVV |
| UniRef90-E4TH64 | V |
| UniRef90_L2FP92 |  |

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|  | UniRef90_M1XNR9 |
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|  | UniRef90_UPI0004198A76 |
|  | UniRef90- Q8TI65 |
|  | UniRef90-M0CY33 |
|  | UniRef90-D4GR74 |
|  | UniRef90-C5CFE7 |
|  | UniRef90-UPI00029A6C8E |
|  | UniRef90-Q0BPR0 |
|  | UniRef90 UPI0003639A1D |
|  | UniRef90-A8IPY9 |
|  | UniRef90-LOJY27 |
|  | UniRef90-B0D207 |
|  | UniRef90_UPI0002374EF7 |
|  | UniRef90-F2UHP8 |
|  | UniRef90-M0E127 |
|  | UniRef90-D8RU77 |
|  | UniRef90-M5U8Y0 |
|  | UniRef90-U1P0F5 |
|  | UniRef90-V6EWV3 |
|  | UniRef90-B0E4G5 |
|  | UniRef90 A0B7J1 |
|  | UniRef90-M9SLC6 |
|  | UniRef90- A8J7H7 |
|  | UniRef90-E4TH64 |
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UniRef90_E4TH64 UniRef90_L2FP92
$S \square P \square P H S P T V A G D A \prod Y N \square H A V D L R T G A G N W S Y T R D D R S \prod^{230}$ EGPVVSSPVFSNGKI IFGSWDRHLYALDSWK WNNGSMVRN TNSSGFDWSGSGNYLVYPVFEGKMVCLEKDTGTFVDEVDF D GAVFASPTYRDGTLYVGSQAGTMYAVDTAGEEVWSASVA GFGUTS $\square$ AMSDGS $\square F F G G S N S R \square S R L D A A T G D V E W S H P V P$
QKTWDNVETDQGGKPYRWTGKEM VVSYSSPIVAT IHGQKH SEADTSLLGDPAPAYADGLVIGGFGSGDVIGLRAATGSVV NGPVVSKPLVYDGLVFFGAWDTY LYALDEVWKWSNGSSNRM $A P E N G G V P G W S G N A V W G S A P A D D E A R G R V Y V A T G N Q Y V A P$ $\square W G Q P H P S P T V D D E T G R D C A G S N D G V V Y C W E F P D L E F A W E$ GHNDTVASVAFSPDGRHIVSGSWDKTIRVWDAQTVAFSPD GTPKGATELDRLVDVDSSPIVLGGTLDRTVGYNGQD HCGSSHTKPAMDNESGILFFSCFRPDPDNPSLRHGGIV HRPTDHPH SSPALSLDAGRMVCGSNDGYLYCWTFPELL VQDCLNRNANSSDCYPRGVCDDAVVAVN GTRDLPHDTTYSAPTLTTIDGQRQLILGTGDGADWGFQPR GGPVASAPVVVDGTAFV TGGATESSGQRAEE ATMRRTEGASALTD DRARPDIDRGRVYA GHDHWVTSVAFSPD GRHVVSGSHDKTVRVWDAQTGQSVMD ETKGYQWCGSCS $\square G N Y V V V G Q N D G I I L S L N R V N G E V A D A L$

TAPPDAGPASWRPWRFRMSNDVWGTPTLA GDLVYV REGYMSPDNDGDNRQTFEVWGDLVIAQDEGETNPNKYGIL
GHTNDVTSVAISPDGMYILSGSFDDTVKLWDITFSGHTDY


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| :---: | :---: |
| Uni | AVA GGTVYF GTA G G DITHR\DAA T GEREWRPYDVFGVP |
| UniRef90_UPI0004198A76 | FAPASCIPVVQDDIVYIVAPDRYLSADDMQTGTTLWRTKE |
| UniRef90-Q8TI65 | SKSSDVSFDPGMFRSSVTYADGALYTSSERGQ E |
| UniRef90-M0CY33 | DRVDSTAAVIDGTVYVGRWNGD |
| UniRef90-D4GR74 |  |
| UniRef90-C5CFE7 | DVLWKHLQDGLIYSSAACLENSP |
| UniRef90-UPI00029A | LLCLLMRQGLVSLNPQDGSLRFKYWFRARVHESVNAARPVV |
| UniRef90-Q0BPR0 | WT DS $\square$ ASASGRTSLSDLSAVTG |
| UniRef90_UPI000363 |  |
| UniRef90-A8IPY9 |  |
| UniRef90-L0JY27 | QTPDGEERADGEFNLGAE $\square$ KGT\AAHDGYGYVGSWDEQF |
| UniRef90_B0D207 | GRHDVSGSWDKTVRVWDA Q T GQRVMGP LR R V V S GS WDETV |
| UniRef90_UPI0002374EF7 | AIDLR SAKPLWKRNYSSANDLA T D GSRIFFVITEKDHV |
| UniRef90-F2UHP8 |  |
| UniRef90-M0E127 |  |
| UniRef90-D8RU77 | DGEDRWCNRLGGNDV |
| UniRef90-M5U8Y0 | TGKPLWHYDLSRRGDFATPLVDGNRVYCSHSEENVSGSAM |
| UniRef90-U1P0F5 | $P V G R L H A D D A G \square D G R S T G S Q V L D G A G G H H G E W A D Q A P T A M$ |
| UniRef90-V6EWV3 | $V \mathrm{VAVDLRTGR} \mathrm{RLWEREDGGI} \mathrm{QSPWVGGDYLFLVNNSNEA}$ |
| UniRef90-B0E4G5 | PLKGHDSWV |
| UniRef90-A0B7J1 | SLNDSTRLSFSQNNPGR $\mathrm{S}^{\text {L }}$ R APVTCKDGWIYTTSEDTANEG |
| UniRef90-M9SLC6 | SFEVHALDVATGRRRFKTRDVAWSMAVADGRIHASDGPT |
| UniRef90-A8J7H7 |  |
| UniRef90-E4TH64 |  |
| niRef90_L2FP92 |  |

[^1]

[^2]|  | $290 \text { 300 } 310$ |
| :---: | :---: |
| UniF | VIPLETADGVIYFGTDNGNVVAFDTGAEENRWR |
| UniRef90-UPIO004198A76 |  |
| UniRef90-Q8TI65 | VGFNPDTGQFLDT GWTAS ${ }^{\text {G }}$ GFSTSTPVVYNG |
| UniRef90-M0CY33 | $V A L D A A S G E E I R T Y A A R G \quad E V A C S P T V R D G V V Y F G$ |
| UniRef90-D4GR74 | 1 Y LGSTNNQLLAFDRATGEEQWAFSVGDHP\QG 1 VSSPA |
| UniRef90-C5CFE7 | YAYNPENGEVVWKFETGAQ VEQSTPS |
| UniRef90-UPI00029A6C8E | VDDNDET GAALLKVQPAGTDYWRNKRGMSTHWSTP |
| UniRef90-Q0BPR0 | $V$ S L L R TGRRL WERPA |
| UniRef90_UPI000363 | HTVRES $\square \mathrm{GK}$ KVAFAARGNSPQLLWEVDCHFGYDHDPNMLQ |
| UniRef90-A8IPY9 | LSLDIE TGELVWGNRVS F F D |
| UniRef90-L0JY27 | YCIDLEDGTEEWAFEFEHRSMA |
| UniRef90_B0D207 | RVWDAQTGQSVMDPFKGHDDYVASVAFSPDGRHDVSGSWD |
| UniRef90-UPI0002374EF7 | VAVDARS GTELWENA S S E M R L T A PVVIDNYLVVG |
| UniRef90-F2UHP8 |  |
| UniRef90-M0E127 | YRVD ${ }^{\text {L }}$ ATGEEDWSFETGDLSMTGPADDPERDAVYMGSHDD |
| UniRef90-D8RU77 | WRLACDTNPPPANCPPEPGPDYDLGESPMLLTIPSRFSKN |
| UniRef90-M5U8Y0 |  |
| UniRef90-U1P0F5 | WDLT G D G G |
| UniRef90-V6EWV3 | VALDAKTGKITWVT QLQMWE |
| UniRef90-B0E4G5 | RVWDAQTGQSVMD PLKGHDSWVTSVAFSPDG RHVVSG |
| UniRef90-A0B7J1 | YVWK $\square$ AF DKETGRFEDRGWSVPI GFSTS T P A $\square$ FADRVYLG |
| UniRef90-M9SLC6 | LYLDAADGSDLWR MPTDAWVYSLKADRGTVVTGTRGG |
| UniRef90-A8J7H7 | STLDVS S LLLISAMGPDHQDVWNWQPAGQTQALDGLVF |
| UniRef90_E4TH64 | VAISLDDNTIKLWDITTGGREITRTFSGHTLPVNSVAISPDG |
| UniRef90_L2FP92 | $L A L D L V I G S I K W V R Q L G V L D A W N L A C V L N P R G A E C P P V V G$ |

[^3]

| UniRef90 M1XNR9 |  |
| :---: | :---: |
| UniRef90-UPI0004198A76 | EKEGKVYF G TKN G I I Y A I D P Y T R E K L WR Y K 1 D |
| UniRef90_Q8TI65 | RVYVGHGE H GE T G SMF CL ND S D GAll WETPI S G G I K S S PV |
| UniRef90_M0CY33 | DYTGVIY AVDTGTAELVWGRQLGG P P V L S S P V |
| UniRef90_D4GR74 | VVQ N RVYF G GY D R YV Y ELHARTGKL M WSFD TGTEI T G S P A |
| UniRef90_C5CFE7 | DDY GTI Y F G T T N GVLY AVN P D GTEKWSVKLNGKIN A S P A |
| UniRef90_UPI00029A6C8E | C $\square$ Y GFS GRHEEE GMLQCLDFKTGELQW |
| UniRef90_Q0BPR0 |  |
| UniRef90_UPI0003639A1D | $V \mathrm{~K} N \mathrm{RDV}$ Y F G T K N S T $\square$ Y S LD S K S Q A $\square$ N WK Y K $\square \mathrm{D}$ |
| UniRef90_A8IPY9 |  |
| UniRef90-L0JY27 |  |
| UniRef90_B0D207 | K T I RVWD AQT GQSVMDPFKGHDD\VTSVAFSPDGRH\\|VSG |
| UniRef90_UPI0002374EF7 |  |
| UniRef90_F2UHP8 |  |
| UniRef90_M0E127 | HLY A L DAA T GEMEWRFRTGRP |
| UniRef90_D8RU77 | K F Q D L V T GQK S G V WA H D R D D G L A WEK TA GPGGF VGGA |
| UniRef90_M5U8Y0 |  |
| UniRef90_U1P0F5 | VDT T GQT A S $\mathrm{R}^{\text {V L D T P GRYRVGLT A T D S T G }}$ |
| UniRef90_V6EWV3 |  |
| UniRef90_B0E4G5 | S Y DK TVRVWD A Q T G S V M P L K G H D HWVT SVA F S P D |
| UniRef90_A0B7J1 | $V$ GEH GHP GA LVVC $\square$ N D T S G D M $\square$ WT Y P VEA GVKA SP A |
| UniRef90_M9SLC6 | GVQAWEAANGEKLWELT GAQTDFETPEAGPVVHDGTVVWQ |
| UniRef90_A8J7H7 | Q GE $\square$ A NTT F N G L G S S TVLLVALP A T P SVVICPPDVKSPPITV |
| UniRef90_E4TH64 |  |
| UniRef90_L2FP92 | LD S D F G M G P T |

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GNDGTVYFGAADKK $\square Y$ A VDYAGN $\square E W S$ FETGDWVESSPA

PHDDRIYYAERGVFTNYW
RH VVS GSWDETVRVWDAQTGQSVMDP LIKGHNGRVTSVAFS

DAATGR】E WSTANPHSARAYEPVTVANGVVFCG
QS GELYALDTETGETRWRFDTGWPVRRAPAVVGGRWRFDT
RHVVSGSYDKTVRVWDAQTGQSVMDPDKGHDDWVTSVAFS DNGYILGGVAVYKGRDYFGTEGDQHYGKLYCDGDDEWSQF VYVAAGTRALA DDVLGGHVRWHFESPAVFLSPPAFAPGPA DGVRAYGQDNA GLVIAVYLDTGADAWKATCGPDSNSLYYP A ISPDGRY IVSGSHDKTURLWDITTGRE $\square R T$ TRGH I DWVN
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jnet conf sol25 sol5 sol0 jhmm

VT D D TVYVGS QDAS $\square Y$ Y $\square$ DRESGQERFAVETDGDVLSSPA AENGD $\square 1$ FGSDDG $\square$ LYRVD RNGN LVWTFETANP $\square R G G A V$ UniRef90 Q0BPR UniRef90_UPIO003639A1D UniRef90 A8IPY9
UniRef90 LOJY27 UniRef90-B0D207
UniRef90_UPIO002374EF7
UniRef90- F2UHP8
UniRef90 M0E127
UniRef90-D8RU77
UniRef90-M5U8Y0
UniRef90-U1P0F5 UniRef90-V6EWV3 UniRef90-B0E4G5 UniRef90-A0B7J1 UniRef90 M9SLC6 UniRef90-A8J7H7 UniRef90-E4TH64 UniRef90 L2FP92

SFDKDGHVLALDAESGR LLWERTTGSTVYG GWPVRRAPAVVGGRVYADDAASGDVLWEASD PAVSSSP PDGRH VVGSRDKTVRVWDAQTGQSVMDP $\square N G H D H W V T S V$ HHD PQHTGLSRSKA PRDNRTAWISEDIRAQPGSSV $V T G G G V Y L T D Y G G T V Y A D D A T D G R D R W R D A T E A R S A T E P V$ $S N V V V V D G V V Y G G D V Q A R D A A T G H L L W R R P F R A A Y R G G I P$
$S V A I S P V S G S Y D N T V K L W D I T T G R E I R T F S G H T L P V T S V A$

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$\square G P D G T V Y$ VGSYDWK $\square Y A \square N P \quad D G T E R W S F E T N G P V H S V P$
 -
AFSPNH $\square V$ GS WDKS $V R$ VWDAQTGQS $V \square D P \square K G H N G R \nabla T S$ TVVNGTVFVGDSNGLVHADSAASGGSLWTAEVGTDSAVRS AFSPDHDASGSHDKTVRVWDAQTGQSVMDPDNGHDHWVTS SVASGMVFVNCVDRLVCLDQISGRVLWSHPFKSAGDYGF LV SGGHVVVGSGKG LYTLDAVTGTPKWRFQAGGEVIGSP AVANGKIVI SKPDGFLQALNDTNGQLVWSYDTG ISPDGUYIVGSSDETVKLWDISTGRQIRTFSGHTNSVYYS
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STTSGDGPGFGAVGALTGLGLGAWRRVRAGSPEAGPDA


VAFSPNGRH■V

S P TVVDGTVLIGGQAGVYG LDVVTGDTRWLFET

VAFSPDGRHIV TPVY H DGK V

F GSADHCLYTLDAAGGQLRWK LA T
S GS YDNTVK LWN $\square$ T T GRE $\square$ RTFKG
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[^1]:    lupas_21
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    lupas_28
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    conf sol25 sol5 sol0 jhmm ssm

[^2]:    $\theta$

[^3]:    lupas_21
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    lupas_28
    jnet
    conf sol25
    sol5
    sol0
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    jpssm

